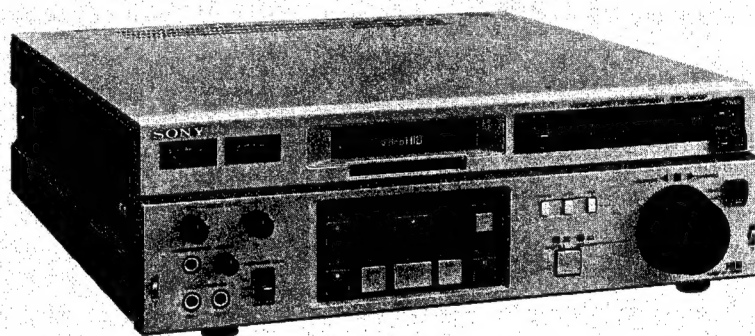


Hi8

VIDEOCASSETTE RECORDER

EVO-9800P



SONY®
SERVICE MANUAL

ADVARSEL!

Lithiumbatteri-Eksplosionsfare
Udskiftning må kun foretages af en sagkyndig,
og som beskrevet i servicemanualen.

Litiumbatteri

Bor endast bytas av servicepersonal.
Explosionsfara vid felaktig hantering.

LITHIUM BATTERY

SHOULD ONLY BE CHANGED BY TECHNICAL PARSONNEL.
THERE IS A RISK OF EXPLOSION IF HANDLED IMPROPERLY.

1-528-229-11

NOTES ON LITHIUM BATTERY

FOR SAFETY CHANGE:

- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with Metallic Tweezers, otherwise a short circuit may occur.

FOR SAFETY DISPOSAL:

- Do not break up the battery nor throw it into a fire which might cause it to explode.
Carefully dispose of the used batteries.

(FOR UK ONLY)

- Wrap the battery in plastic bag and throw it in the waste bin.

FOR REPLACEMENT:

- CAUTION: Because of the risk for explosion the battery must be replaced with the same type and manufacturer.

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SECTION 1 GENERAL DESCRIPTION

1-1. FEATURES

High-quality picture in Hi8 video system

Thanks to the Hi8 video system, picture quality of 8mm video system is extremely improved. A metal tape with large magnetic energy allows high-density recording, and makes it possible to record and play back a high-quality picture.

Automatic editing system

Using the EVO-9800P, an automatic editing system can be composed together with an RM-450CE editing control unit and a VO-9850P U-matic VTR. The EVO-9800P functions as a player in this system, which allows high-quality and precise editing of the program recorded with a compact and light-weight 8 mm camcorder.

Chroma noise reducer

Thanks to a digital chroma noise reducer, a life-like color reproduction will be possible. The chroma noise reducer can also eliminate the jitter so that a stable playback picture can be obtained.

Hi-Fi sound with the AFM and PCM recording

A monaural AFM recording and two-channel PCM recording with wide dynamic range can be simultaneously executed. Cannon XLR 3-pin connectors usually used for professional audio equipment are employed for the audio inputs and outputs.

Recording and playback of the 8 mm time code

The 8mm time code can be recorded on a tape on which video and audio signals have been recorded. The 8 mm time code being played back is transferred to the RS-422A serial interface time code data, and output from the REMOTE 1 (9P) connector. Using this time code data, precise editing will be possible.

Search operation

A search dial with the shuttle and jog functions is furnished. In shuttle mode, playback pictures can be viewed at various speed from $1/30$ times to 15 times normal speed in forward direction, or from $1/30$ times to 13 times normal speed in reverse direction as well as in a still mode. In jog mode, playback pictures from still to ± 1 time normal speed can be viewed.

As the playback can be performed in both forward and reverse directions, any desired scene can be easily found.

LED time counter

The time counter indicates the tape running time and the 8 mm time code in hours, minutes, seconds and frames by the LEDs. These are useful to check the recording time of a material and the current tape position.

Remote control

The unit is equipped with a 9-pin remote control connector. When the equipment which has a 9-pin remote connector such as an RM-450CE editing control unit, is connected here, the EVO-9800P can be remotely controlled with this unit.

When a BKU-703A 33-pin editing interface (optional) is installed in the EVO-9800P, it can be remotely controlled by the equipment with a 33-pin remote connector such as an RM-440.

Dial menu operation

With the search dial, you can change the setting values for the 8 mm time code and others.

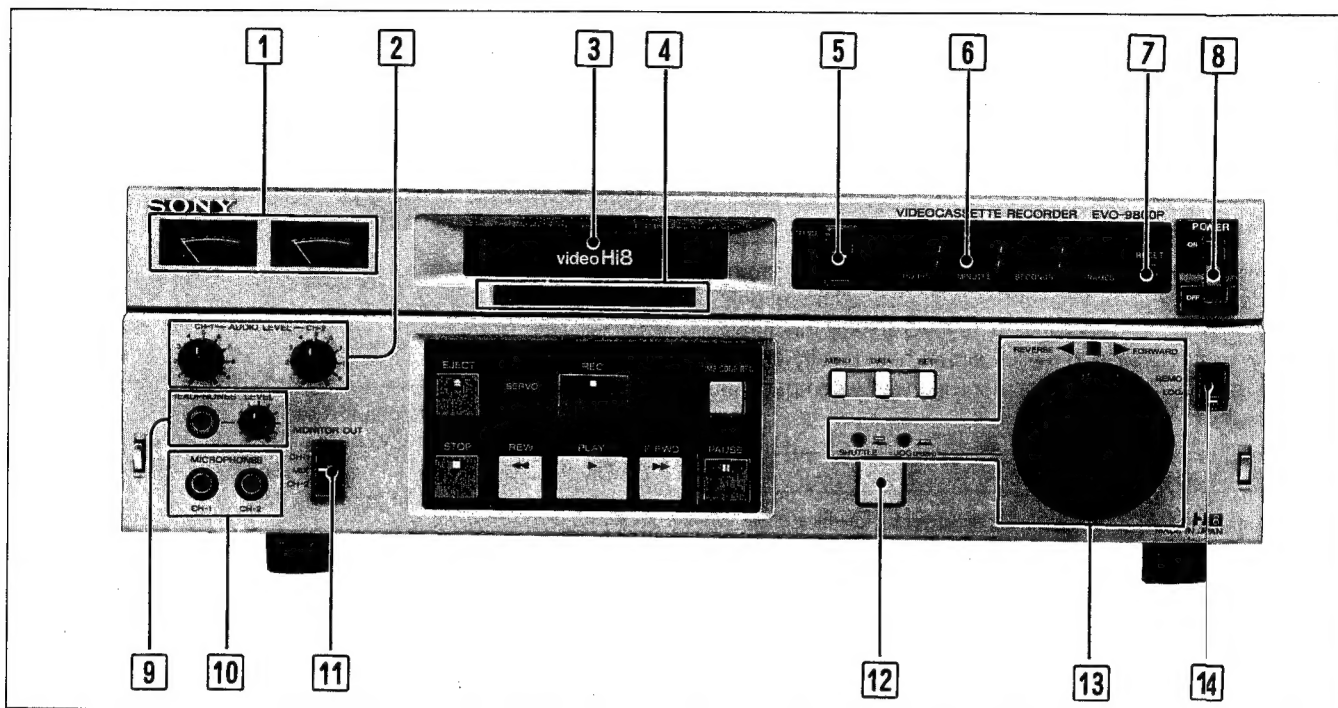
Dubbing connectors

A connector for duplicating video signals for a U-matic VTR is furnished.

S-VIDEO input and output connectors

The separated Y (luminance) and C (chrominance) signals can be fed to and from the EVO-9800P through the S-VIDEO input and output connectors, which results in high quality pictures.

1-2. LOCATION AND FUNCTION OF PARTS AND CONTROLS (FRONT PANEL)



- 1 Audio level meters**
Audio recording level is shown in recording, and audio playback level in playback.

- 2 AUDIO LEVEL controls**

- 3 Cassette compartment**

- 4 Indicator section**

	Lights when a cassette is in the cassette compartment.
AUTO OFF	Lights at power-on when moisture is condensed inside the unit. While this indicator is lit, a cassette cannot be loaded.
STANDBY	Lights while a tape is being threaded from or unthreaded to the cassette inside the unit.
TC	Lights when 8 mm time code is being recorded, or when the tape on which 8 mm time code is recorded is played back.
PCM	Lights when PCM sound is recorded on the tape or during PCM audio recording.
SP*	Lights when the tape speed is in SP (standard play) mode.
Hi8*	Lights when the tape is recorded in the Hi8 video system.

- * The SP and Hi8 indicators will light when the power is turned on, and when a tape not recorded in SP or Hi8 mode is inserted, the corresponding indicator will go out.

- 5 COUNTER/TC/DIAL MENU selector**

Selects what is displayed in the time counter display **6** as follows.

COUNTER	Displays time period of tape travel in hours, minutes, seconds and frames.
TC	Displays 8 mm time code.
DIAL MENU	The unit goes into the dial menu operation mode and the dial menu will be displayed. In this mode, any other functions are deactivated.

Note

You can put the EVO-9800P in the dial menu operation mode with the REMOTE/LOCAL selector **14** set to LOCAL, only when a cassette is not inserted or when the unit is in the stop mode.

- 6 Time counter display**

Displays the item selected by the COUNTER/TC/DIAL MENU selector **5**.

7 RESET button

When the COUNTER/TC/DIAL MENU selector [5] is set to the COUNTER position and the time counter display [6] shows the time period of the tape travel, press to reset the time counter to 0:00:00:00.

8 POWER switch

9 HEADPHONES connector (stereo phone jack), HEADPHONES LEVEL control

10 MICROPHONES CH-1 and CH-2 connectors (phone jacks)

11 MONITOR OUT switch

Select the sound to be monitored through headphones or a speaker of a video monitor.
The sound selected by the OUTPUT SELECT switch on the subpanel is selected as follows:

CH-1	To hear the channel-1 sound only
MIX	To hear the sounds both on channels 1 and 2*
CH-2	To hear the channel-2 sound only

* When stereo headphones are used, the sound of channel 1 will be heard from the left unit and the sound of channel 2 from the right unit. When a monitor speaker connected to the MONITOR AUDIO or TV connector is used, mixing sound of both channels 1 and 2 will be heard.

12 Search button

Press to put the unit in the search mode, and the search operation with the search dial in jog or shuttle mode will be possible.

If the setting of the dial menu number 209 is changed, the unit enters the search mode without pressing the search button.

See "Dial Menu Operation" for details.

13 Search dial and SHUTTLE/JOG lamps

Functions as a search dial for quickly locating edit points or as a selector for the dial menu operation according to the setting of the COUNTER/TC/DIAL MENU selector [5].

Setting	Function
COUNTER or TC	Search for a scene.
DIAL MENU	Dial menu operation.

The details of the function are as follows:

Search for edit points

Set the COUNTER/TC/DIAL MENU selector [5] to COUNTER or TC, and press the search button [12]. The search dial can make the tape run in jog or shuttle mode. Push in to change from the shuttle mode to the jog mode and push it in again to change back. The corresponding lamp lights to show the current mode. Rotate the dial clockwise to run the tape forward (the ► FORWARD lamp lights), and counterclockwise to run the tape in reverse (the REVERSE ◀ lamp lights).

When the tape stops, the ■ lamp lights.

SHUTTLE	Set the dial to one of 16 positions to run the tape at a speed from 1/30 to 15 times normal speed in forward direction, and from 1/30 to 13 times normal speed in reverse direction. A still picture is obtained at the center detent position.
JOG	The dial turns freely. The tape runs at a speed from 0 to 1 times normal speed while the dial is rotated. When the dial is stopped, a still picture is obtained.

Note

When playback at slow speed less than 1/2 time normal speed continues for about 30 seconds in shuttle or jog mode, the playback automatically stops.

Dial menu operation

Set the COUNTER/TC/DIAL MENU selector to DIAL MENU. Rotate the dial while pressing the MENU button [24] or the DATA button [25] to set characters or numbers on the display.

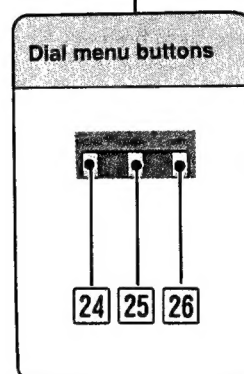
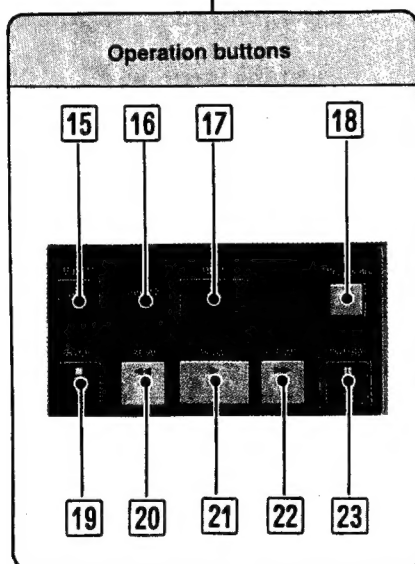
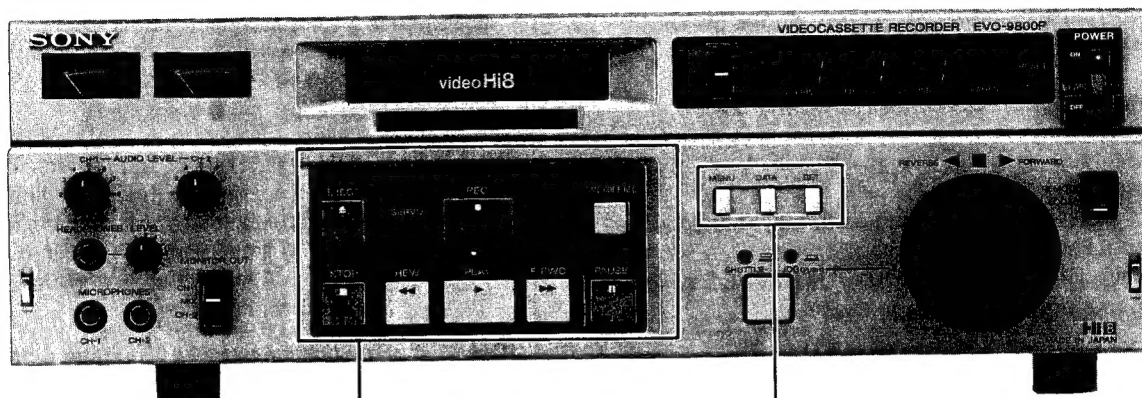
See "Dial Menu Operation" for details.

14 REMOTE/LOCAL selector

Use this selector to control this unit with other equipment connected to the REMOTE 1(9P) connector on the rear panel.

The functions are controlled as follows:

REMOTE	Set to this position when you want this unit to be controlled by the unit connected to the REMOTE 1 (9P) connector (9-pin). With this selector set to REMOTE, none of the operation buttons for tape travel, except for the STOP and EJECT buttons, will function.
LOCAL	Set to this position to operate this unit alone.




Operation buttons

15 EJECT button

Press to eject the video cassette.


16 SERVO lamp

With the PLAY  button pressed, normally the drum and capstan servo-mechanisms will start working properly. This lamp lights when the servo-mechanisms are locked in a reference signal.


Note

The SERVO lamp blinks if the servo-mechanisms are not locked in during editing.

17 REC (record) button and indicator

For recording, press this button simultaneously with the PLAY  button.

18 TIME CODE REC button

For recording the 8 mm time code, press this button simultaneously with the PLAY  button.

Note

While the 8 mm time code is recorded, lower part of the picture on the monitor is blanked by a black bar.


19 STOP button

Press to stop the operation of the unit. The E-to-E mode picture can be seen on the monitor screen.

20 REW (rewind) button and lamp

Press to rewind the tape. The E-to-E mode picture can be seen on the monitor screen.

21 PLAY button and lamp

Press to play the tape back. Simultaneously pressing this button with the REC  button sets the unit in the record mode: simultaneously pressing it with the TIME CODE REC button sets the unit in the 8 mm time code recorded mode.

22 F FWD (fast forward) button and lamp

Press to advance the tape rapidly. The E-to-E mode picture can be seen on the monitor screen.

Note




When the tape runs by pressing the F FWD or REW button with the COUNTER/TC/DIAL MENU selector set to COUNTER, the counter indication and actual tape position may not correctly match.

E-to-E (Electric-to-Electric) mode

An input video signal which has passed through the amplifier in the recorder, is displayed on the monitor screen. This is the E-to-E mode picture, permitting the input signal to be checked on the monitor screen.

The unit automatically enters the E-to-E mode when it is set in the stop, F FWD or REW mode.

23 PAUSE button and lamp

Press to stop the tape momentarily. To start the tape, press again. When this button is pressed during playback, a still picture will be obtained. If the PLAY , F FWD , REW  or search button is pressed during the pause mode, the pause mode will be released and the tape will run in the mode designated by the button pressed.

Dial menu buttons

The dial menu buttons 24, 25 and 26 are used only when the COUNTER/TC/DIAL MENU selector 5 is set to DIAL MENU.

24 MENU button

While pressing this button, turn the search dial 13 in jog mode to select the menu.

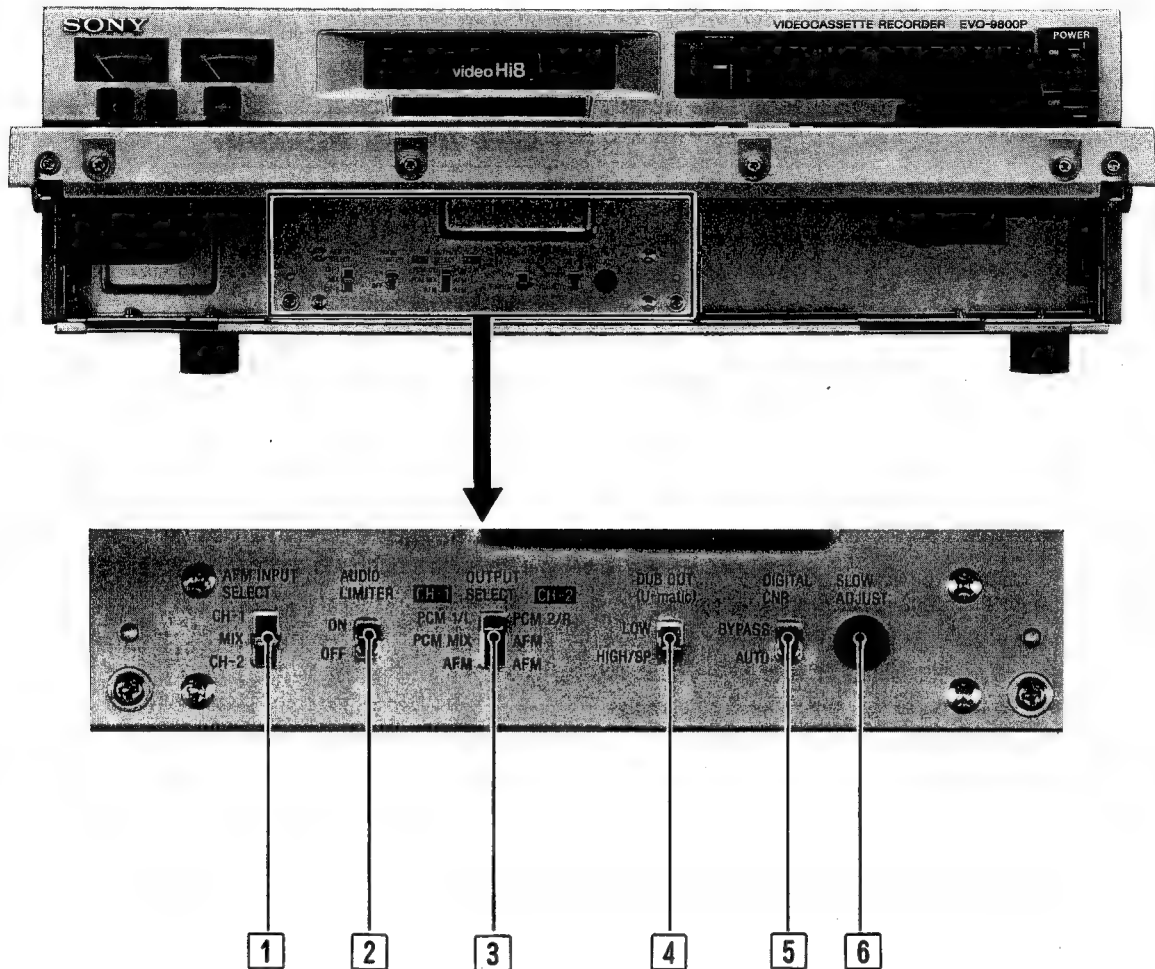
25 DATA button

While pressing this button, turn the search dial 13 in jog mode to set the data.

26 SET button

Press this button to settle the data set by the DATA button 25.

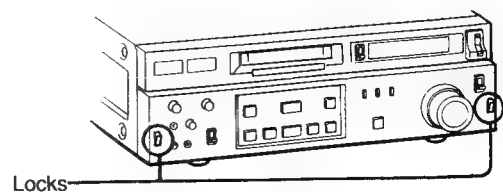
(SUB-PANEL)



Opening and positioning the control panel

To change the setting of the switches on the sub-panel inside the control panel, open the control panel as illustrated. The control panel can be tilted upwards by 30°, 60° or 90° for convenience.

- 1 Push down the locks on the both sides simultaneously so that the lower half of the front panel comes to the front.
- 2 Tilt the panel up and lock it at the desired angle of 30°, 60° or 90°. Be sure to check that both sides are locked firmly.



1 AFM INPUT SELECT switch

Selects the sound for AFM recording.

CH-1	To record the sound connected to the AUDIO LINE IN CH-1/L connector.
MIX	To record the mixed sound connected to the AUDIO LINE IN CH-1/L and CH-2/R connectors.
CH-2	To record the sound connected to the AUDIO LINE IN CH-2/R connector.

2 AUDIO LIMITER switch

ON	The audio recording limiter circuit is activated to minimize sudden surges of input signals and perform recording with low sound distortion. For microphone recording, use this setting.
OFF	The limiter circuit is deactivated, enabling a manual recording level adjustment.

3 OUTPUT SELECT switch

Selects the sound output from the AUDIO LINE OUT CH-1/L and CH-2/R connectors.

Setting		Output	
CH-1	CH-2	CH-1/L connector	CH-2/R connector
PCM 1/L	PCM 2/R	The sound recorded on the PCM channel 1	The sound recorded on the PCM channel 2
PCM MIX	AFM	The mixed sound recorded on the PCM channels 1 and 2	The sound recorded in AFM
AFM	AFM	The sound recorded in AFM	

4 DUB OUT (U-matic) selector

Sets according to the recording type of the U-matic recorder connected to the DUB OUT (U-matic) connector.

LOW	When a U-matic VTR for recording in low-band mode is connected.
HIGH/SP	When a U-matic VTR for recording in high-band mode or an SP system U-matic VTR is connected.

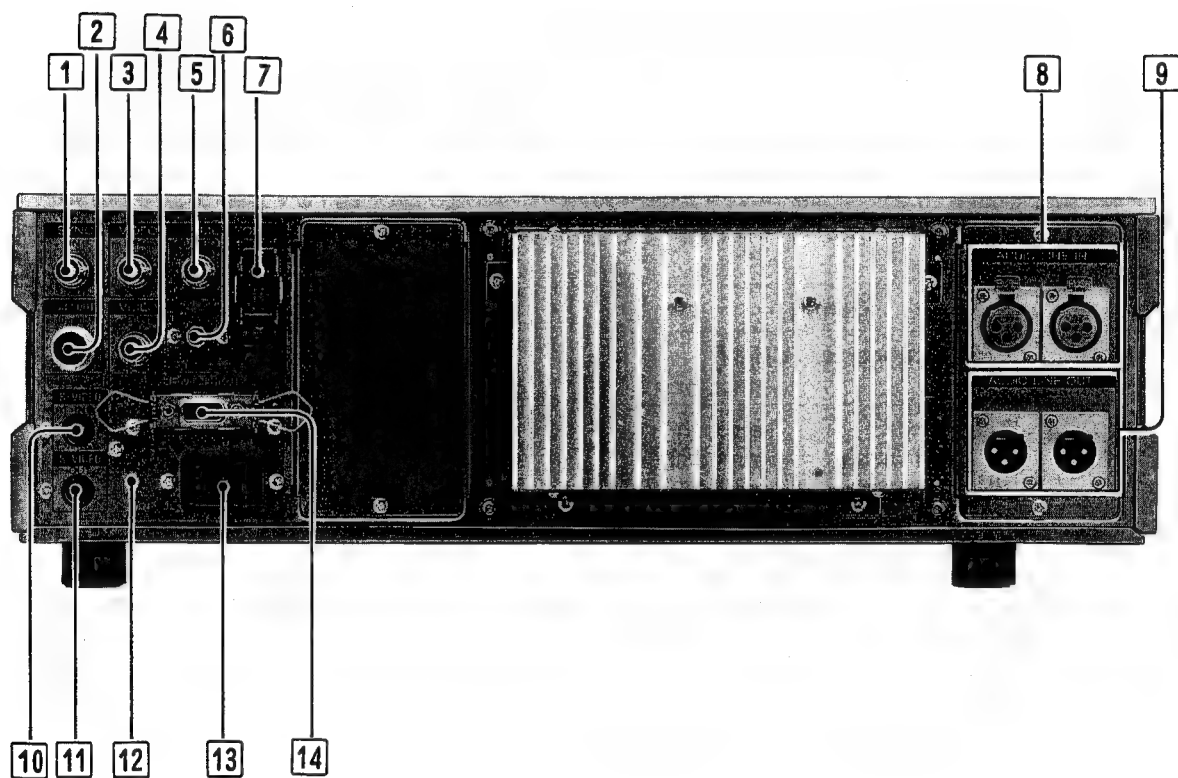
5 DIGITAL C.N.R. (Chroma Noise Reducer) switch

BYPASS	The video signal bypasses the built-in digital noise reducer.
AUTO	During playback, the video signal automatically passes the chroma noise reducer. Normally use this setting.

6 SLOW ADJUST (slow-motion picture adjustment) control

Normally keep this control at the center click position. If streaks or snow appear during slow-motion playback, turn this control so that the best possible picture is obtained.

(REAR PANEL)



1 SYNC IN (sync signal input) connector (BNC type)
Accepts an external reference video signal to operate the unit in synchronization with an external device.

2 DUB OUT U-matic (dubbing output for U-matic VTR) connector (7-pin)
Use to supply the video signal to be dubbed to a U-matic VTR. Connect to the dub input connector of the U-matic VTR using the 7-pin dubbing cable (optional).
(Be sure to set the DIGITAL C.N.R. switch to AUTO.)

3 VIDEO IN (video input) connector (BNC type)
Supply a composite video signal to this connector.

4 VIDEO OUT connector (BNC type)
Supplies a composite video signal.

5 MONITOR VIDEO connector (BNC type)
This outputs the video signal for monitoring. Connect to the video input connector of a color monitor. Information superimposed on a picture in the dial menu operation mode will also be output.

6 MONITOR AUDIO connector (phono jack)
Supplies an audio signal selected by the MONITOR OUT switch on the front panel.

7 MONITOR TV connector (8-pin connector)
Accepts a video monitor having an 8-pin VTR connector. Both the MONITOR VIDEO, and MONITOR AUDIO connections can be replaced with a single cable connection here. In playback, the channel selected by the MONITOR OUT switch will be heard through the speaker on the video monitor.
• The data of the dial menu is superimposed on the video signal and output.

8 AUDIO LINE IN CH-1/L and CH-2/R connectors (XLR 3-pin, female)

9 AUDIO LINE OUT CH-1/L and CH-2/R connectors (XLR 3-pin, male)

10 S-VIDEO IN connector (4-pin)
Supply an S-VIDEO signal to this connector. When the 4-pin connector is inserted here, the signal supplied to this connector has priority over the signal connected to the VIDEO IN connector (BNC type).

11 S-VIDEO OUT connector (4-pin)
Supplies an S-VIDEO signal.

12 Ground terminal

13 AC IN (power inlet)
Plug in the supplied AC power cord to supply power to the EVO-9800P.

14 REMOTE 1 (9P) connector (9-pin)
Connect a Sony editing control unit such as an RM-450CE to perform editing.
Use the 9-pin remote control cable (optional) to make the connection.

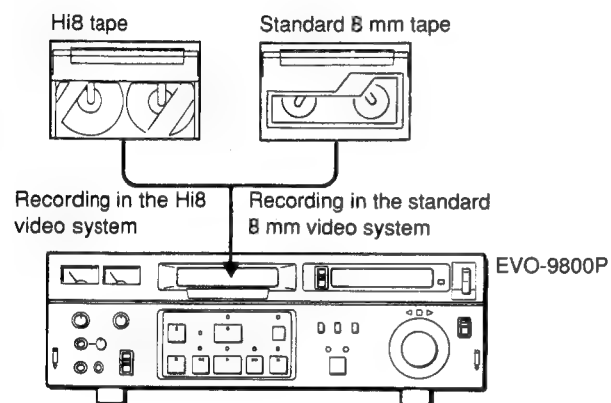
1-3. NOTES ON VIDEO CASSETTE

Cassette Tape Being Used and Automatic Switching

• recording mode

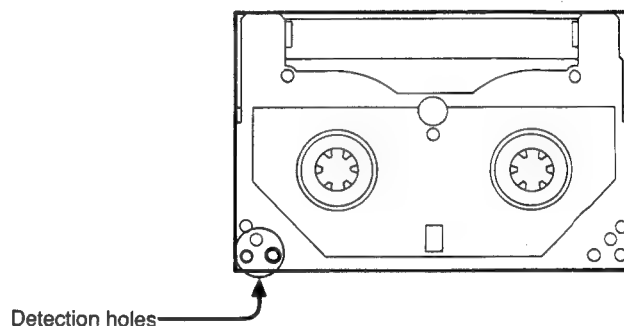
When using a Hi8 cassette tape for recording, the VTR senses the detection holes on the cassette shell (see below), and automatically performs the recording in the SP (standard play) mode of Hi8 video system.

When using a standard 8 mm tape, the recording is performed in the standard 8 mm video system.

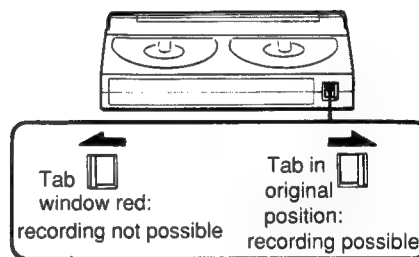


Hi8 Cassette Tape

This new Hi8 tape with high durability was specially developed for Hi8 video system recording/playback and features characteristics best suiting the Hi8 video system. Hi8 cassettes have a detection hole on the bottom of the cassette shell to automatically set Hi8 VTRs in the Hi8 video system recording.



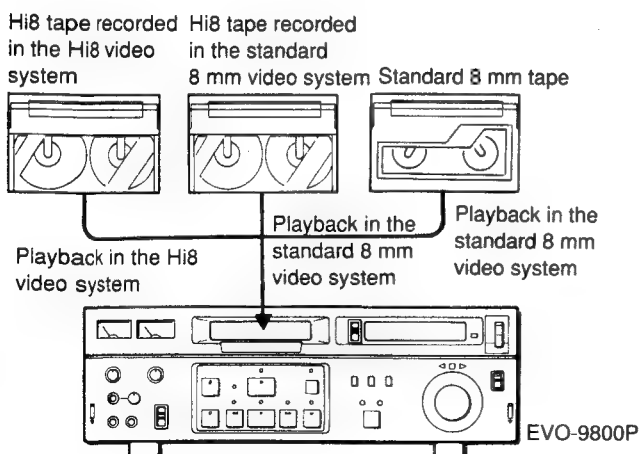
Record prevent Tab



• playback mode

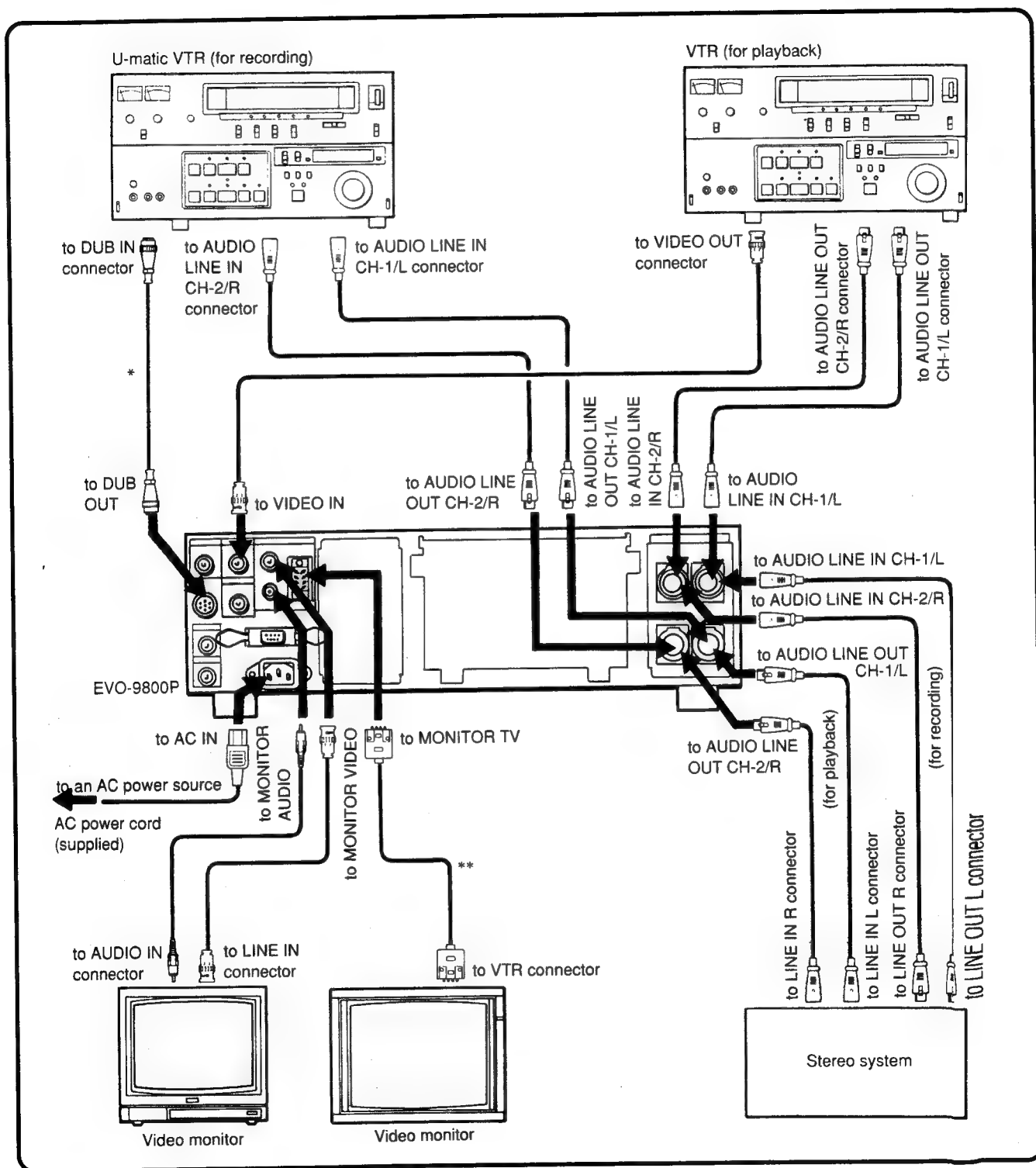
In playback, the VTR can detect the system mode used in recording by verifying the recorded signal, and plays back the tape in the appropriate mode.

- The Hi8 indicator on the front panel lights when a tape recorded in the Hi8 video system is played back.



1-4. CONNECTIONS

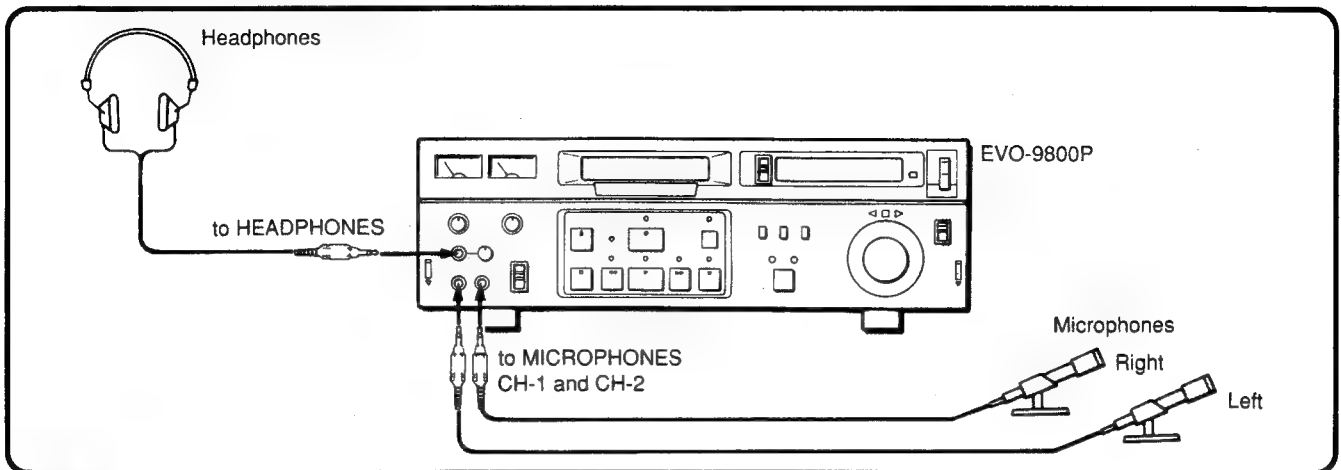
1-4-1. Basic Connections



* Dubbing cable VDC-5. When the VTR is not equipped with the DUB connector, use the VIDEO OUT connector on the EVO-9800P for connecting a video output signal using a cable with BNC connectors.

** Use a VMC-3P, VMC-5P or VMC-10P monitor connecting cable.

1-4-2. Connections of Headphones and Microphones



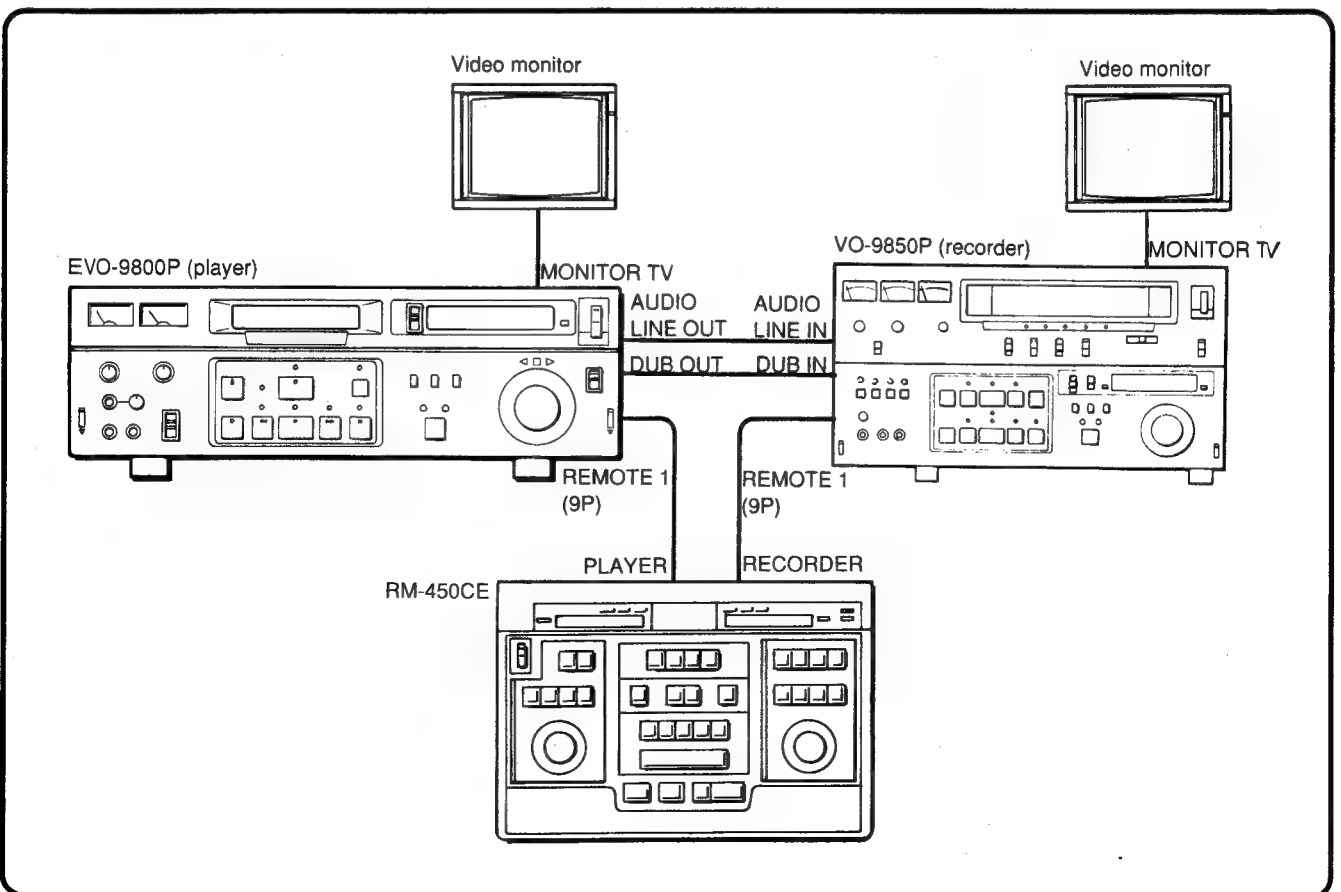
Note

When the microphones are connected, the signals connected to the AUDIO LINE IN connectors on the rear panel are automatically cut off, and signals from the microphones will be recorded.

1-5. EDITING

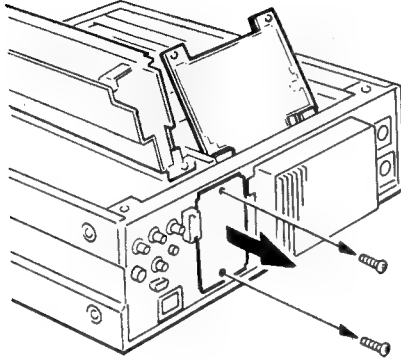
The EVO-9800P can be used as a player of an automatic editing system composed of the editing control unit, U-matic VTR for recording, video monitors, etc. Then the program recorded by a video camcorder can be edited.

An example of an editing system is introduced here. For details on connections and operations, refer to the instruction manual supplied to the editing control unit or VTR.

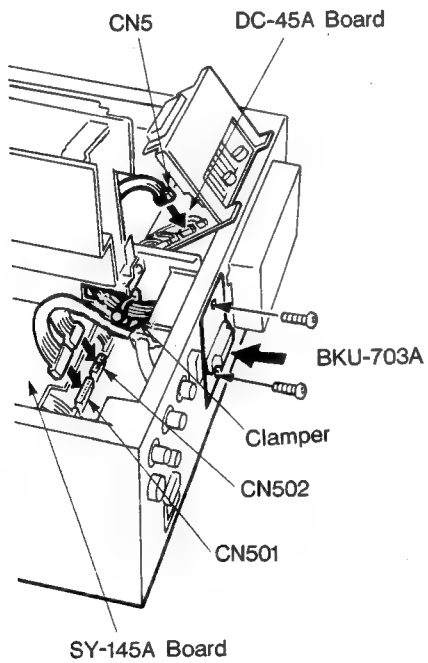


1-6. INSTALLATION OF BKU-703A (33P) EDITING INTERFACE

Remove the Blank Panel as shown in the figure.



Install the BKU-703A as shown in the figure.



About details, please refer to operation manual of BKU-703A.

1-7. RACK MOUNTING

The RMM-980 (option) is prepared for mounting the EVO-9800P in a rack.

SECTION 2 SERVICE INFORMATION

2-1. REMOVAL AND INSTALLATION OF THE CABINET

Front Panel

1. Remove the Top Panel and Side Panels. Remove the four fixing screws.
2. Remove the Front Panel, while releasing the each claw of the left and right side. (fig.1)
3. When installing the Front Panel, press it in the direction of the arrows and put the two grooves of the Front Panel to the shafts as shown in the figure.

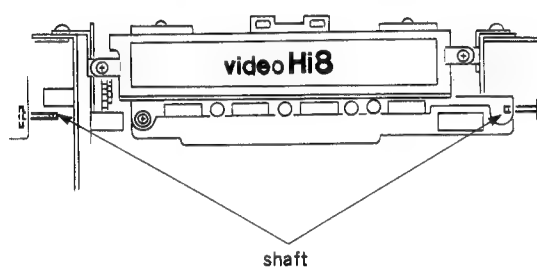


Fig. 2

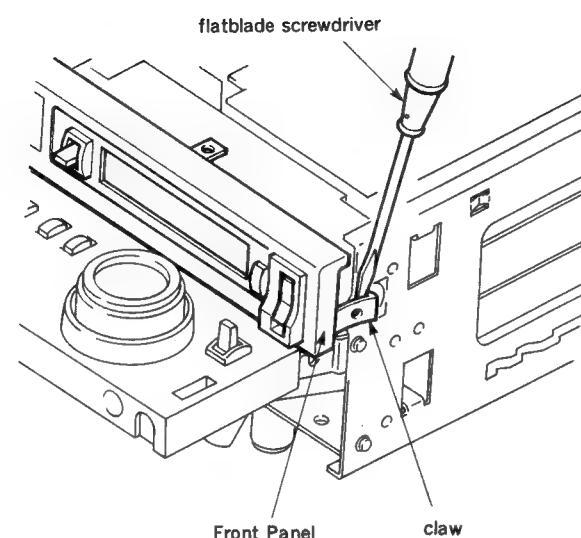


Fig. 1

Key Panel

1. While pushing down the right and left levers on the front of the Key Panel, open the panel at a 90 degrees angle.
2. Remove the Dial Knob from the Key Panel. (fig.3)
 - (1) Remove the Dial Knob Rubber and the Knob Plate from the Dial Knob.
 - (2) Remove the fixing screw and remove the Dial Knob from the Key Panel.
3. Remove the three Control Knobs from the Key Panel.
4. Remove the four fixing screws. Reverse the Key Panel at a 30 degrees angle and remove it from the unit.
5. When installing the Key Panel, press it in the direction of the arrows and put the two grooves of the Front Panel into the shafts of the Key Panel Chassis.

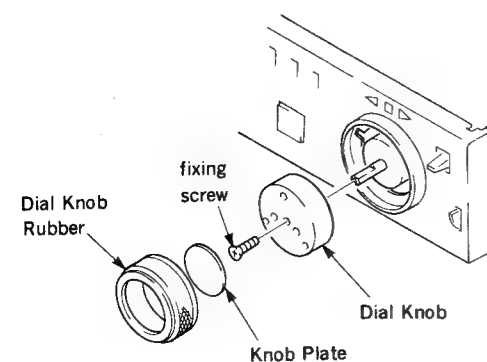


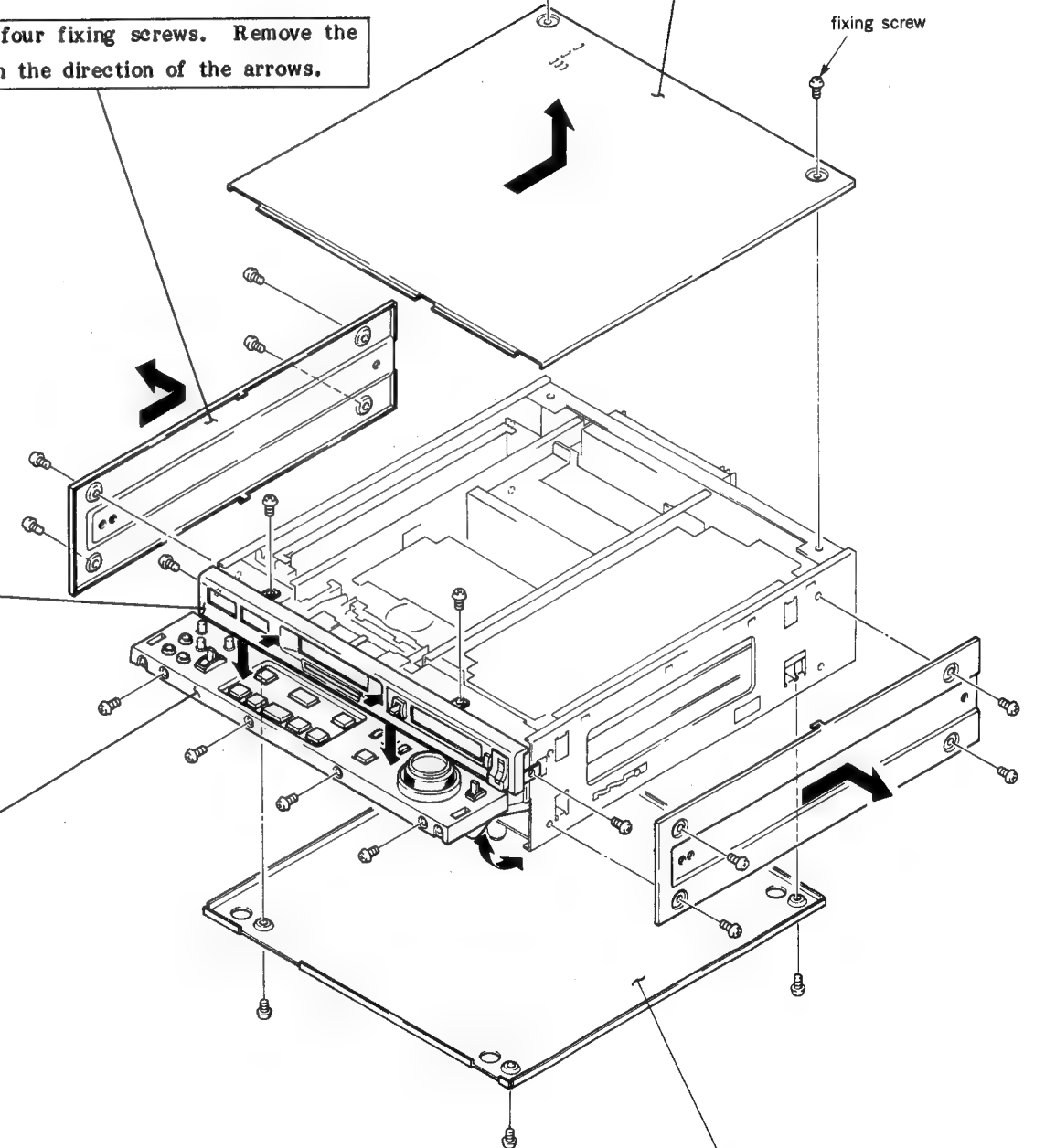
Fig. 3

Side Panel

Remove the four fixing screws. Remove the Side Panel in the direction of the arrows.

Top Panel

Remove the two fixing screws. Remove the Top Panel in the direction of the arrows.

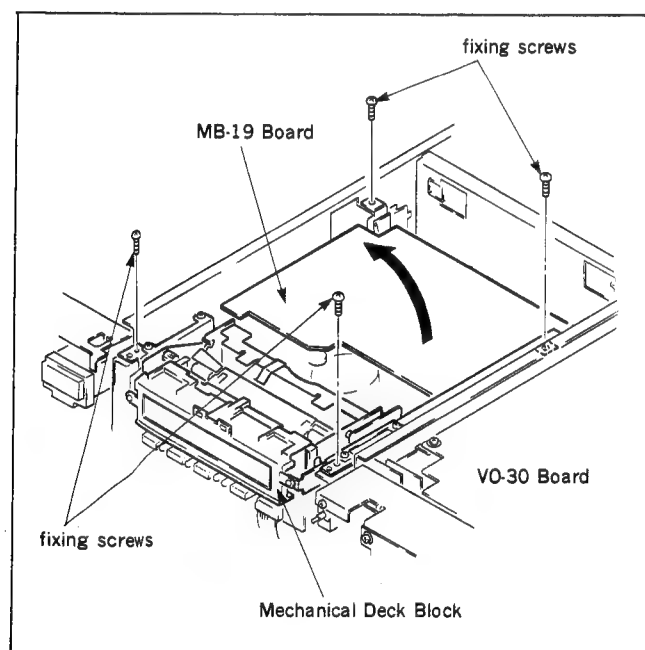


Bottom Plate

Remove the four fixing screws and remove the Bottom Plate.

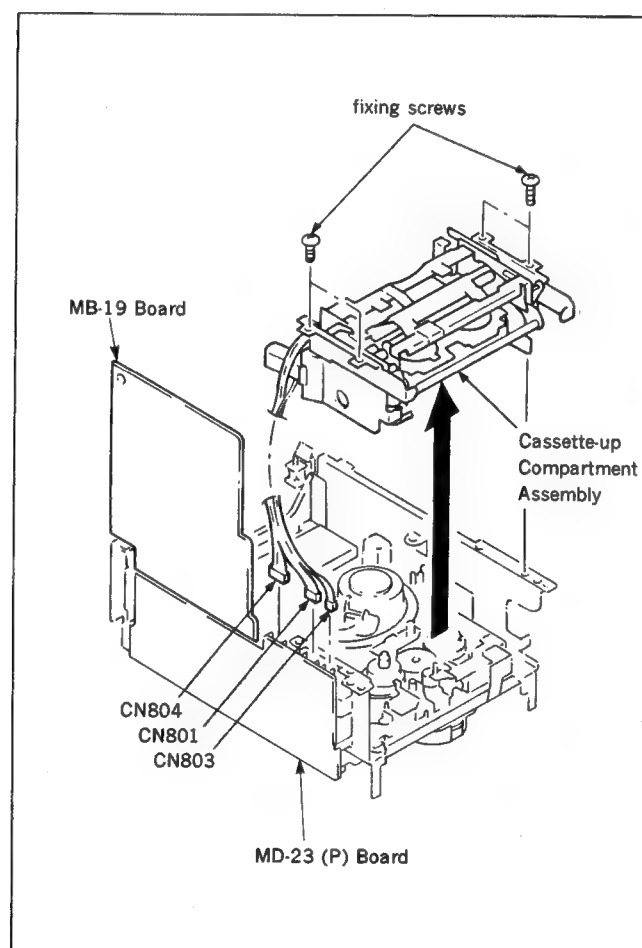
2-2. REMOVAL OF THE MECHA DECK BLOCK

1. Disconnect the connectors (CN902, 903, 904) on the SE-10(P) Board from the bottom side of the unit.
2. Remove the two fixing screws from the top of the unit. Release the claw of the PC holder and open the MB-19 Board.
3. Disconnect the connectors (CN911, 912, 913) on the HK-5 Board and the connectors (CN905, 907) on the SE-10(P) Board.
4. Disconnect the connectors (CN923, 924) on the MB-19 Board.
5. Open the VO-30 Board and disconnect the CN555 (Condensation Sensor) on the DI-12 Board.
6. Remove the four fixing screws as shown in the figure and remove the Mechanical Deck Block from the unit.



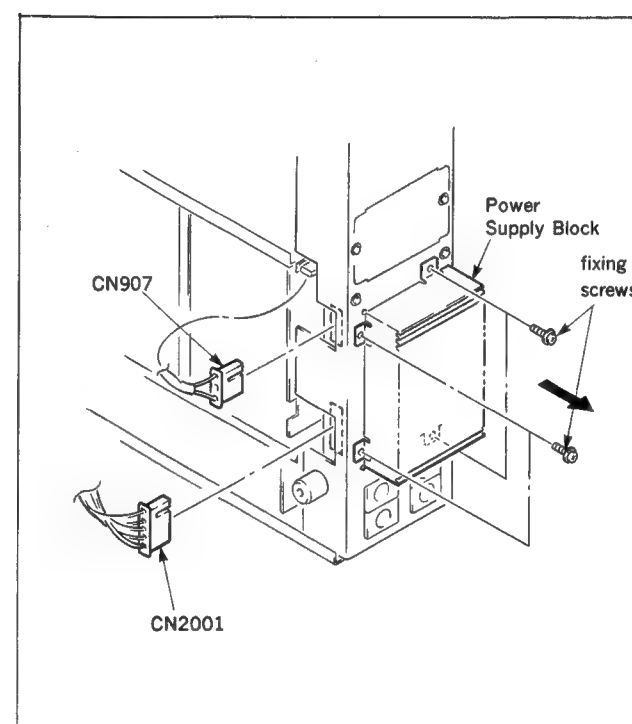
2-3. REMOVAL OF THE CASSETTE-UP COMPARTMENT ASSEMBLY

1. Remove the two fixing screws. Release the claw of the PC holder and open the MB-19 Board.
2. Disconnect the connectors (CN801, 803, 804) on the MD-23(P) Board.
3. Remove the four fixing screws and remove the Cassette-up Compartment Assembly in the direction of the arrow.



2-4. REMOVAL OF THE POWER SUPPLY BLOCK

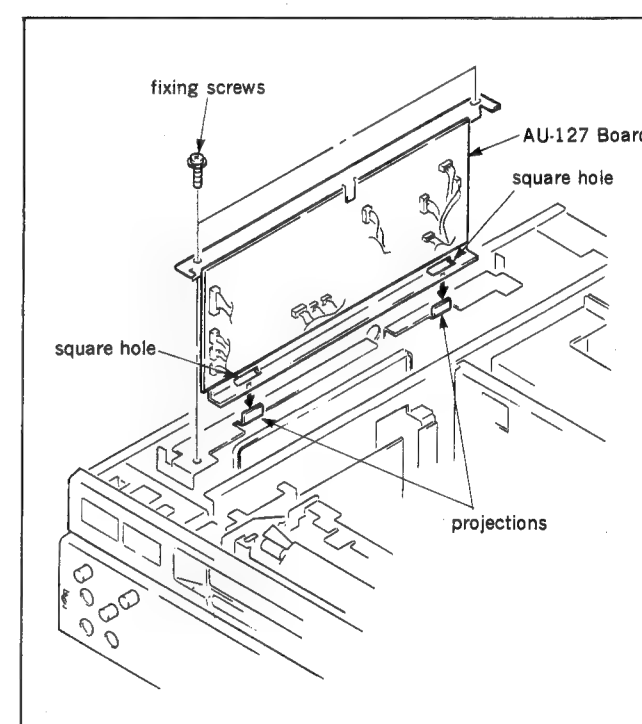
1. Remove the Bottom Plate.
2. Disconnect the connector (CN907) of the Power Switch.
3. Disconnect the connector (CN2001) of the DC-45A Board.
4. Remove the four fixing screws and remove the Power Supply Block from the unit.



2-5. SERVICE OF THE PRINTED CIRCUIT BOARDS

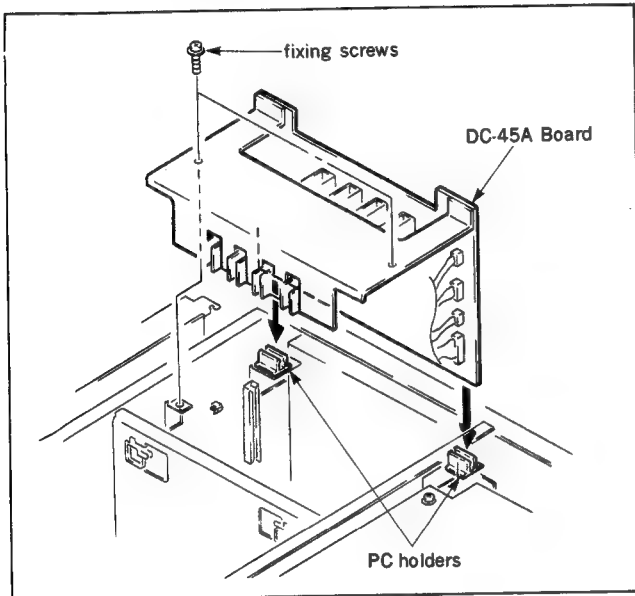
2-5-1. Servicing the AU-127 Board

1. Remove the two fixing screws as shown in the figure and pull out the AU-127 Board from the unit.
2. Insert the two square holes into the two projections of the chassis and stand the AU-127 Board.



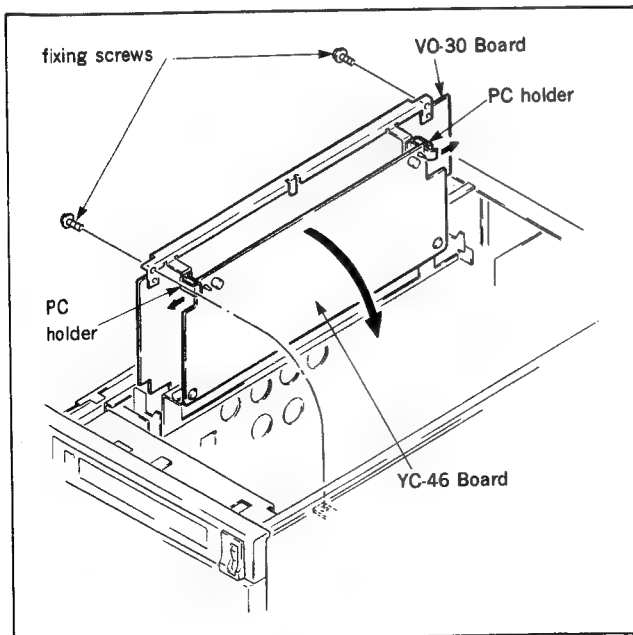
2-5-2. Servicing the DC-45A Board

1. Remove the two fixing screws and pull out the DC-45A Board from the unit as shown in the figure.
2. Insert the DC-45A Board into the two PC holders and stand it.



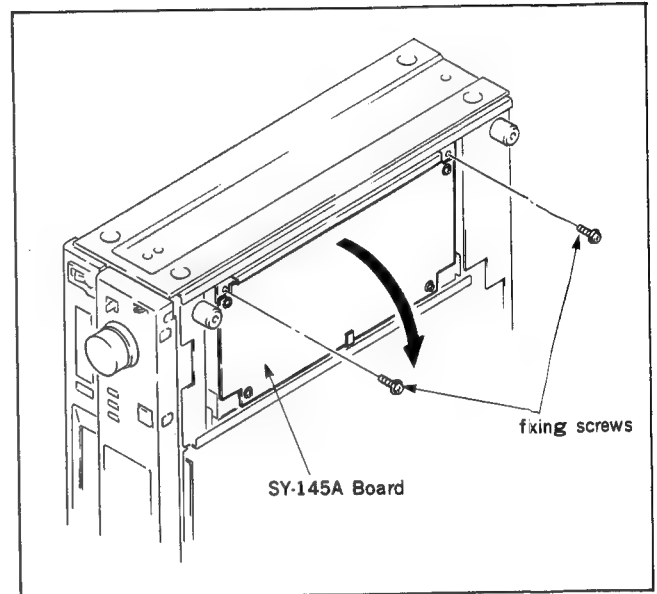
2-5-3. Opening the VO-30 and YC-46 Boards

1. Remove the two fixing screws and open the VO-30 Board.
2. Release the two claws of the PC holder and open the YC-46 Board.



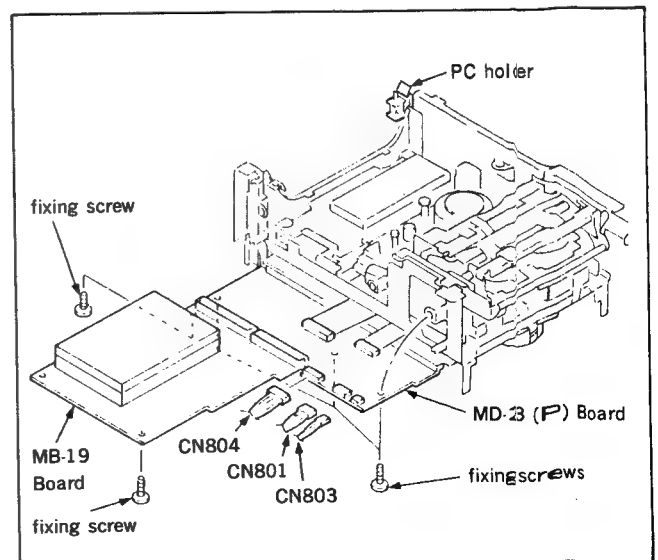
2-5-4. Opening the SY-145A Board

1. Place the unit on the left side down. Remove the Bottom Plate.
2. Remove the two fixing screws and open the SY-145A Board as shown in the figure.



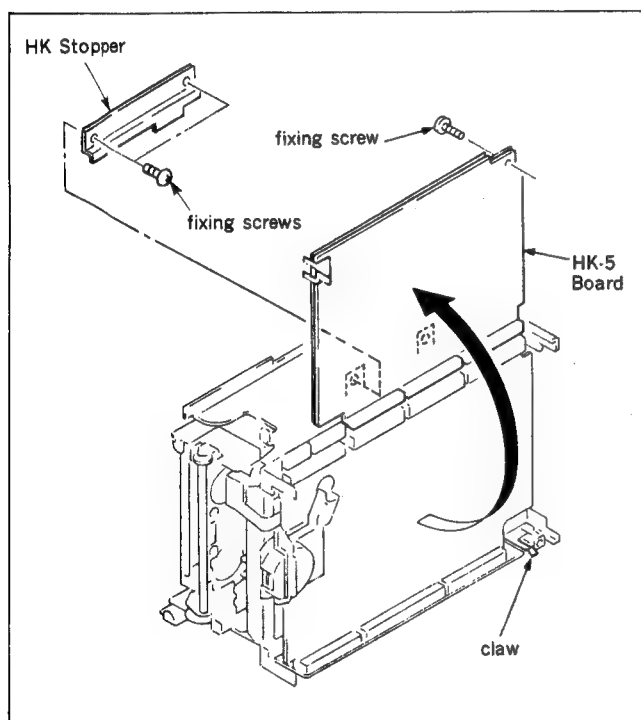
2-5-5. Opening the MB-19 and MD-23(P) Boards

1. Remove the two fixing screws. Release the claw of the PC holder and open the MB-19 Board.
2. Disconnect the connectors (CN801, 803, 804) on the MD-23(P) Board.
3. Remove the three fixing screws and open the MD-23(P) Board.



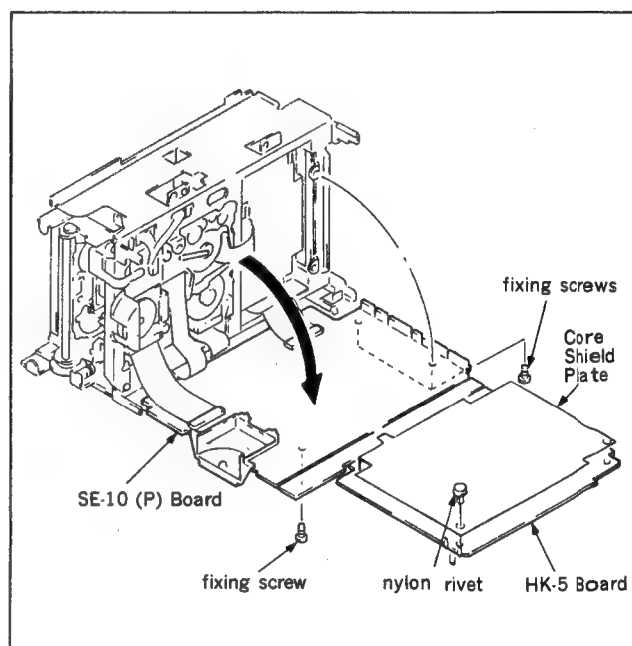
2-5-6. Opening the HK-5 Board

1. Remove the two fixing screws and remove the HK Stopper.
2. Remove the fixing screw of the HK-5 Board.
3. Release the claw as shown in the figure and open the HK-5 Board in the direction of the arrow.



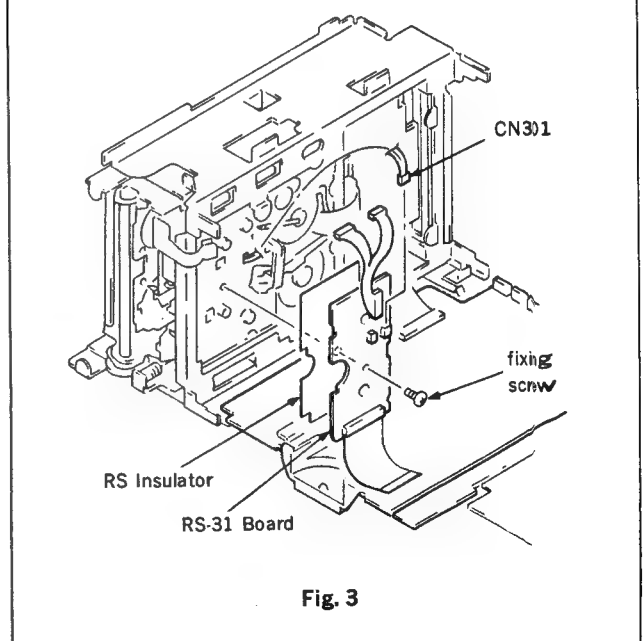
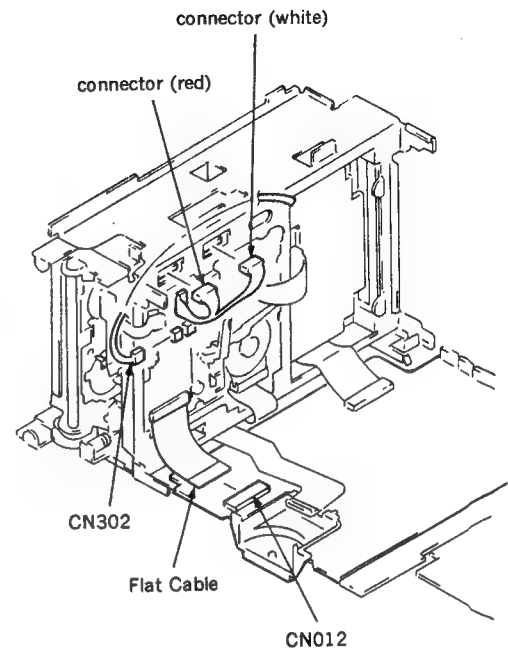
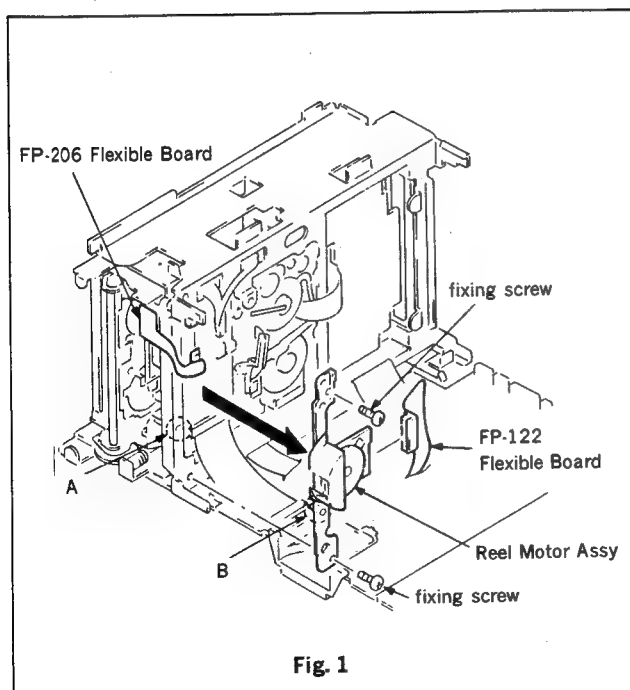
2-5-7. Opening the SE-10(P) Board

1. Open the HK-5 Board as described in Section 2-5-6.
2. Remove the nylon rivet and remove the Core Shield Plate.
3. Remove the three fixing screws of the SE-10(P) Board.
4. Open the SE-10(P) Board in the direction of the arrow.



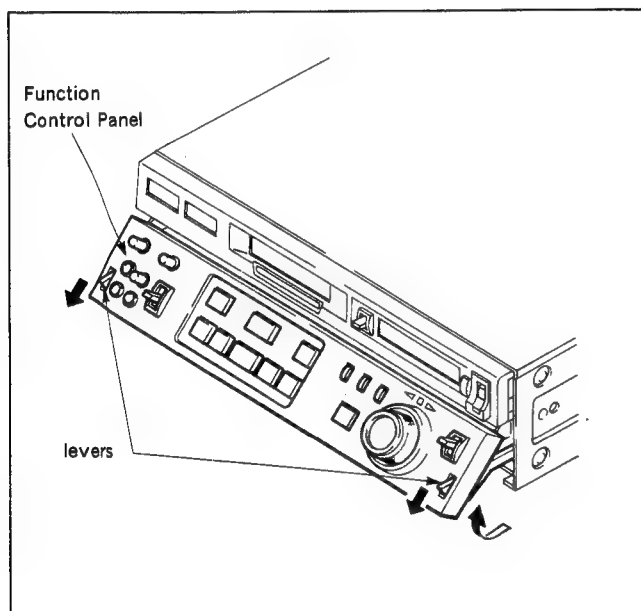
2-5-8. Removal of the RS-31 Board

1. Disconnect the FP-122 Flexible Board.
2. Disconnect the FP-206 Flexible Board.
3. Remove the two fixing screws of the Reel Motor Assembly.
4. Insert a flatblade screwdriver into "A". Disconnect protrusion "B".
5. Remove the Reel Motor Ass'y in the direction of the arrow. (fig. 1)
6. Disconnect the connector (CN302) on the RS-31 Board.
7. Disconnect the two connectors (MS-4 Board, red), (LS-9 Board, white).
8. Disconnect the Flat Cable from the connector (CN012) on the SE-10(P) Board. (fig. 2)
9. Disconnect the connector (CN301) on the RS-31 Board.
10. Remove the fixing screw of the RS-31 Board.
11. Remove the RS-31 Board and RS Insulator. (fig. 3)



2-6. FUNCTION CONTROL PANEL POSITIONING

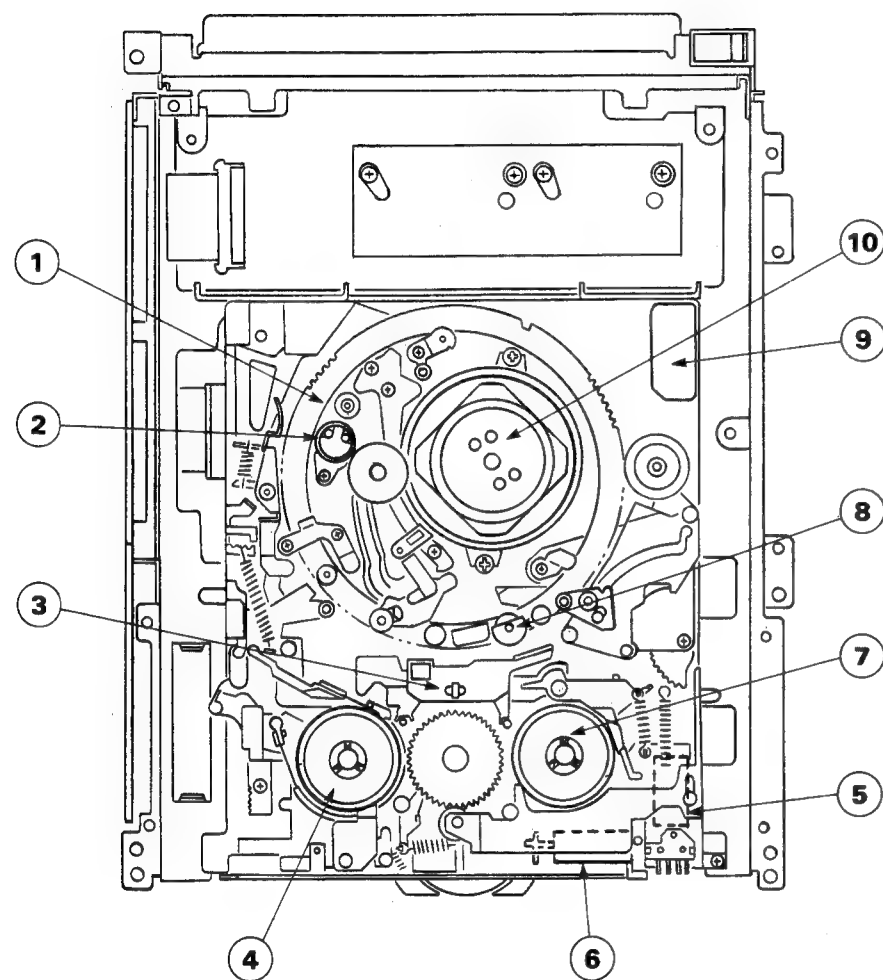
Open the Function Control Panel, while pushing down the left and right levers on the front of the panel. Open the panel at a 90 degrees and it is possible to operate the switches on the sub-panel. Opening angle of the panel can be adjusted to 30, 60, and 90 degrees respectively.



2-7. LOCATION OF MAIN PARTS

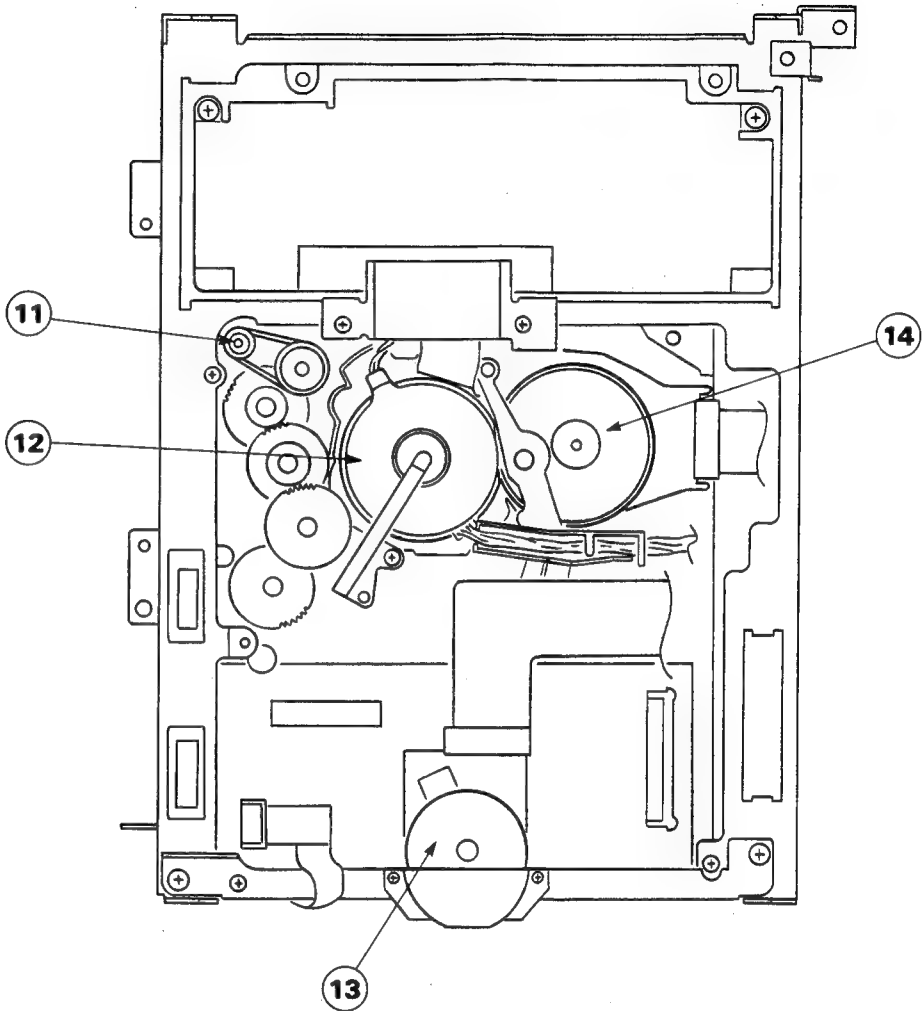
2-7-1. Location of the Main Mechanical Parts/Components

TOP VIEW



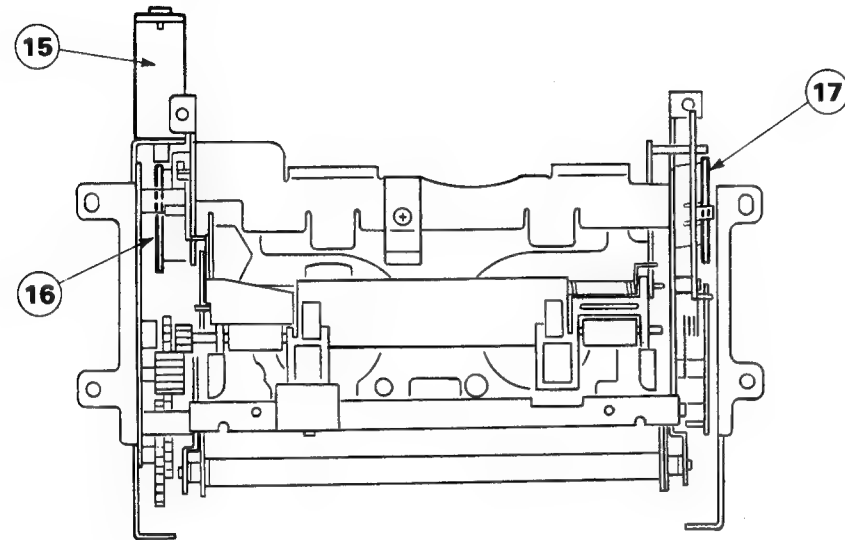
- | | |
|---------------------|-----------------------------|
| ① Threading Ring | ⑥ Brake Plunger Solenoid |
| ② Capstan Shaft | ⑦ Take-up Reel Table |
| ③ Tape Top/End LED | ⑧ Pinch Roller Arm Assembly |
| ④ Supply Reel Table | ⑨ Threading Motor |
| ⑤ Control Motor | ⑩ Drum |

BOTTOM VIEW

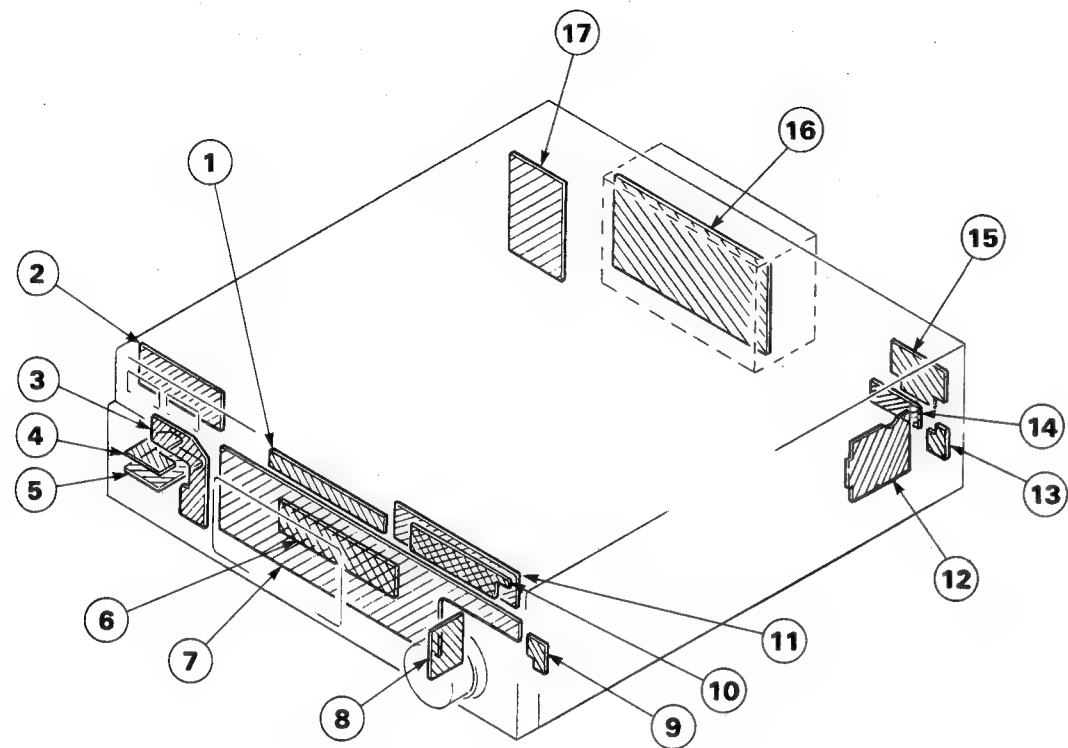


- | |
|-------------------|
| ⑪ Threading Motor |
| ⑫ Drum |
| ⑬ Reel Motor |
| ⑭ Capstan Motor |

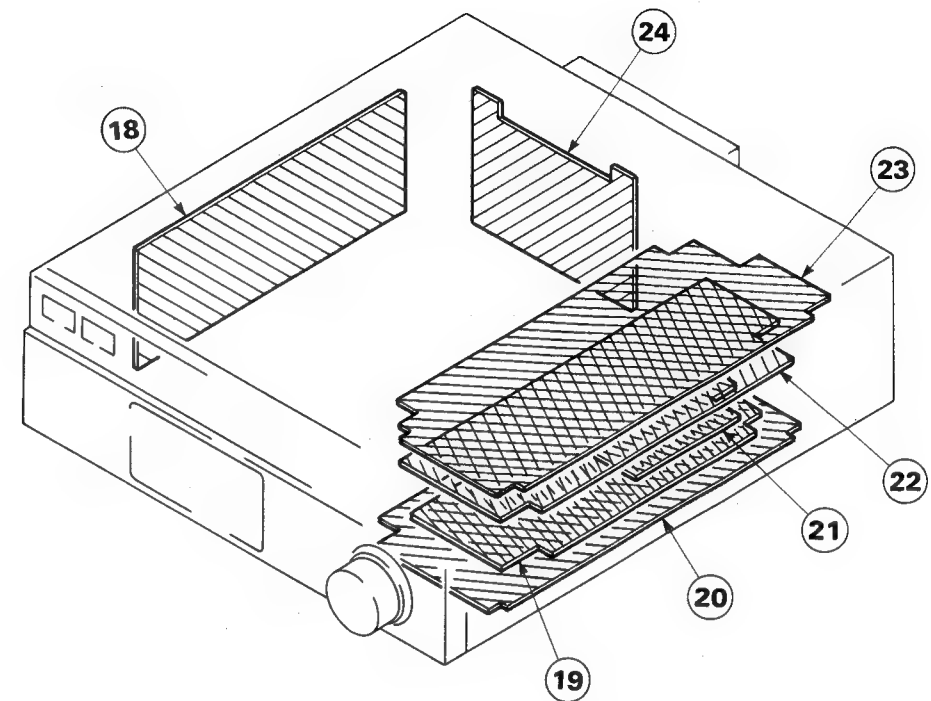
CASSETTE-UP COMPARTMENT
TOP VIEW



- ⑮ Cassette Loading Motor
- ⑯ Tape End Sensor
- ⑰ Tape Top Sensor

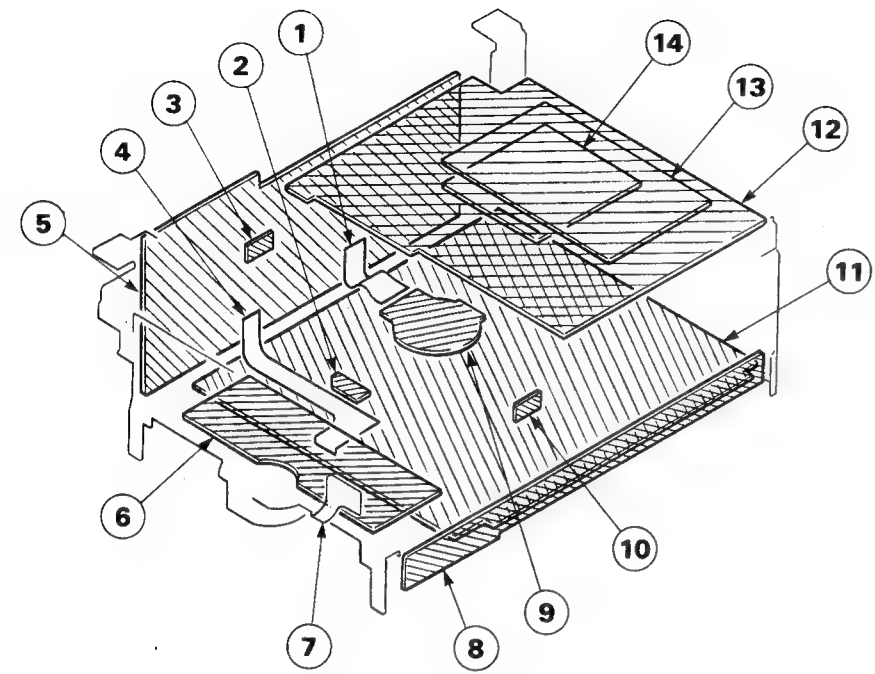


- | | |
|-----------------|--------------------------------|
| ① LP-52 Board | ⑩ DP-101 Board |
| ② MT-57 Board | ⑪ DD-12 Board |
| ③ SW-346 Board | ⑫ AC-89 Board |
| ④ HP-42 Board | ⑬ CP-162 Board |
| ⑤ MC-28 Board | ⑭ RM-88 Board |
| ⑥ SW-347A Board | ⑮ CP-141 Board |
| ⑦ KY-162 Board | ⑯ Switching Regulator (UR-14E) |
| ⑧ PTC-32 Board | ⑰ AA-16 Board |
| ⑨ SW-348 Board | |

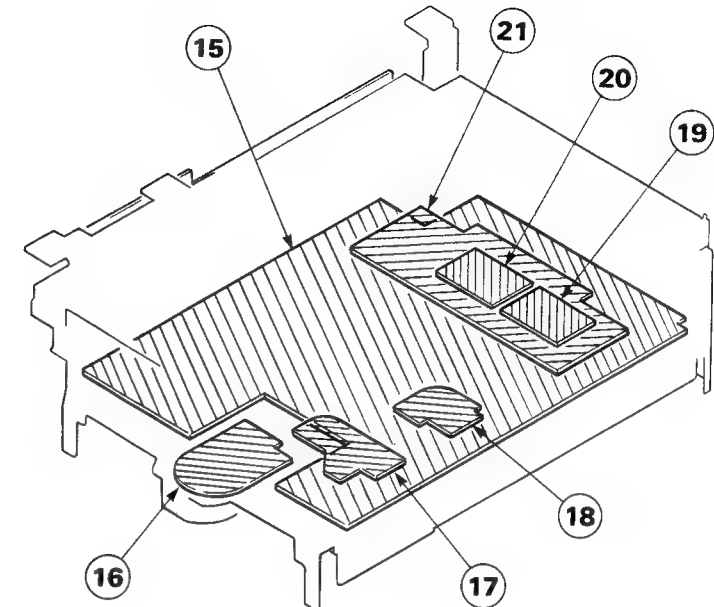


- | |
|-----------------|
| ⑱ AU-127 Board |
| ⑲ DI-12 Board |
| ⑳ SY-145A Board |
| ㉑ DI-13 Board |
| ㉒ YC-46 Board |
| ㉓ VO-30 Board |
| ㉔ DC-45A Board |

MECHANICAL DECK



- | | |
|--|--|
| ① FP-84 Flexible Board | ⑧ IG-4 Board |
| ② LD-1 Board | ⑨ Capstan Motor Board |
| ③ TS-74 (L) Board
(Cassette-up Compartment) | ⑩ TS-74 (R) Board
(Cassette-up Compartment) |
| ④ FP-122 Flexible Board | ⑪ HK-5 Board |
| ⑤ MD-23(P) Board | ⑫ MB-19 Board |
| ⑥ RS-31 Board | ⑬ PD-19 Board |
| ⑦ FP-206 Flexible Board | ⑭ PA-27 Board |



- | |
|---------------------|
| ⑮ SE-10(P) Board |
| ⑯ Reel Motor Board |
| ⑰ MS-4 Board |
| ⑱ LS-9 Board |
| ⑲ RP-103 Board (SP) |
| ⑳ RP-73 Board (LP) |
| ㉑ FR-43 Board |

2-8. PRINTED CIRCUIT BOARDS

The circuit information is provided below.

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	YC-46	YC Separator
	VO-30	Video Interface
AUDIO	AU-127	Audio Input/Output Amp
	AA-16	XLR Input/Output Amp
SYSCON	SY-145A	System Control
	KY-162	Function Key Board
	DP-101	Display
	DD-12	Display Drive
	PTC-32	Search Dial
DIGITAL PROCESS	DI-12	Digital CNR
	DI-13	Read Timing Control Pulse Generator
POWER	AC-89	AC Input
	DC-45A	DC Supply
Others	LP-52	Mode Display
	CP-141	Connector Panel
	SW-346	Audio Level Control
	SW-347A	Audio select SW
	SW-348	Remote Panel SW
	MC-28	Mic. Jack
	HP-42	Head phones Level
	MT-57	Audio Meter Level
	RM-83	9-pin Connector
	CP-162	S Connector IN-OUT

Mechanical deck

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	FR-43	Head Amp/Flying Erase
	HK-5	Y/C Video process
	RP-73	REC/PB Head Amp (LP)
	RP-103	REC/PB Head Amp (SP)
AUDIO	MB-19	PCM Audio
	PA-27	PCM Audio Analog
	PD-19	PCM Audio Digital
SYSCON SERVO	TS-74	Tape Top/End Sensor
	IG-4	Terminal
	LD-1	Tape Sensor
	MS-4	Mode Switch
	LS-9	Loading Switch
	RS-31	Mechanism Control
	MD-23 (P)	Capstan/Drum Drive
Others	SE-10 (P)	Servo, Syscon
	FP-84	Connection
	FP-206	Connection
Others	FP-122	Connection

2-9. CONNECTORS

When external cables are connected to the various connectors on the connector panel during maintenance, the hardware listed below (or equivalents) must be used.

PANEL INDICATION	CONNECTOR
VIDEO IN VIDEO OUT SYNC IN MONITOR VIDEO	1-560-069-11 PLUG, BNC, MALE
MONITOR AUDIO	1-506-311-00 PLUG, PIN
DUB OUT	1-508-948-00 PLUG, 7P, MALE
REMOTE(9P)	1-560-651-00 PLUG, 9P, MALE and 1-561-749-00 JUNCTION SHELL, 9P
AUDIO LINE IN	1-508-084-00 CONNECTOR, XLR, 3P, MALE
AUDIO LINE OUT	1-508-083-00 CONNECTOR, XLR 3P, FEMALE
MONITOR TV	1-506-161-00 CONNECTOR, 8P, MALE
S-VIDEO IN S-VIDEO OUT	S-VIDEO CONNECTOR CONNECTING CABLE (Option): YC-30V (3m) YC-15V (1.5m)

2-10. CONNECTOR INPUT/OUTPUT SIGNAL

The connector INPUT/OUTPUT signals of the connector panel are as follows.

INPUT

VIDEO IN	: 1.0 ± 0.3 Vp-p, 75 ohms, unbalanced, sync negative
SYNC IN	: 1 to 5 Vp-p, 75 ohms, unbalanced, sync negative
MIC IN (front panel)	: -60 dBu, more than 3k ohms (600 ohm microphone is usable.) unbalanced
AUDIO LINE IN (CH-1/L, CH-2/R)	: +4 dBu, more than 10k ohms (600 ohm possible), balanced
S-VIDEO IN	: Y : 1.0 ± 0.2 Vp-p, 75 ohms unbalanced, sync negative C : 0.3 ± 0.06 Vp-p, 75 ohms unbalanced

OUTPUT

VIDEO OUT	: 1.0 ± 0.2 Vp-p, 75 ohms, unbalanced, sync negative
(MONITOR VIDEO OUT : 1.0 ± 0.2 Vp-p, 75 ohms, TV-VIDEO OUT (8P) unbalanced, sync negative DUB OUT	
AUDIO LINE OUT (CH-1/L, CH-2/R)	: +4 dBu (at 600-ohm load), balanced
(MONITOR AUDIO OUT: -5 dBu (at 47k-ohm load), TV-AUDIO OUT (8P) unbalanced	
HEADPHONES OUT (front panel)	: -46 to -26 dBu (at 8-ohm load), adjustable, stereo
S-VIDEO OUT	: Y : 1.0 ± 0.2 Vp-p, 75 ohms unbalanced, sync negative C : 0.3 ± 0.06 Vp-p, 75 ohms unbalanced

MONITOR

8P


Pin	Output Signal
1	AUDIO MONITOR OUT (X)
2	VIDEO OUT (X)
3	NC
4	NC
5	AUDIO MONITOR OUT (G)
6	VIDEO OUT (G)
7	NC
8	NC

REMOTE CONTROL

REMOTE 1 (9P)

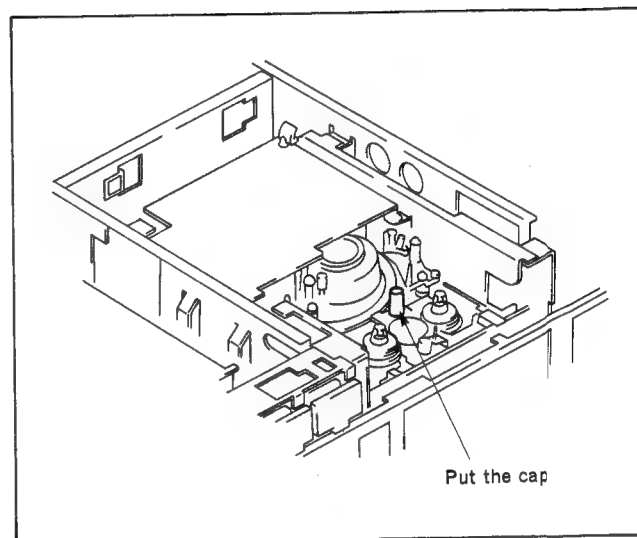
Pin	I/O Signal	I/O
1	FRAME GND	—
2	TRANSMIT A	O
3	RECEIVE B	I
4	RECEIVE COMMON	—
5	SPARE	—
6	TRANSMIT COMMON	—
7	TRANSMIT B	O
8	RECEIVE A	I
9	FRAME GND	—

2-11. SPARE PARTS

- (1) The  -marked components are critical to safety. Replace only with same components as specified.
- (2) Replacement parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to accommodating the improved parts and/or engineering changes or standardization of genuine parts. This manual's exploded views and electrical spare parts list indicate the part numbers of the standardized genuine parts at the present. Regarding engineering part changes in our engineering department, refer to Sony service bulletins and service manual supplements.
- (3) The parts marked with s in the SP column of the exploded views and electrical spare parts list are normally stocked for replacement purposes. The parts marked with o in the SP column are not normally required for routine service work. Orders for parts marked with o will be processed, but allow for additional delivery time.

2-12. MUTING OF THE TAPE BEGINNING SENSOR AND TAPE END SENSERS

Put the cap on the LED Assembly as shown in the figure.



2-13. HOW TO OPERATE THE UNIT WITHOUT CASSETTE-UP COMPARTMENT AND CASSETTE TAPE INSERTING

. The unit will not operate if there is a strong light source near it.

1. How to put the unit into the THREADING mode.

- (1) Remove the Top Panel and Front Panel referring to Section 2-1.
- (2) Remove the Cassette Compartment Assembly from the unit referring to Section 2-3. Then do not disconnect the connectors.
- (3) Turn the power ON.
- (4) Stick the adhesive tape on the RECOG Switch and the pins are pressed.
- (5) Press the micro switch of the Cassette Compartment Block on time in the direction of the arrow, and remove it.
- (6) Turn the Reef Switch of the Cassette Compartment Block ON.

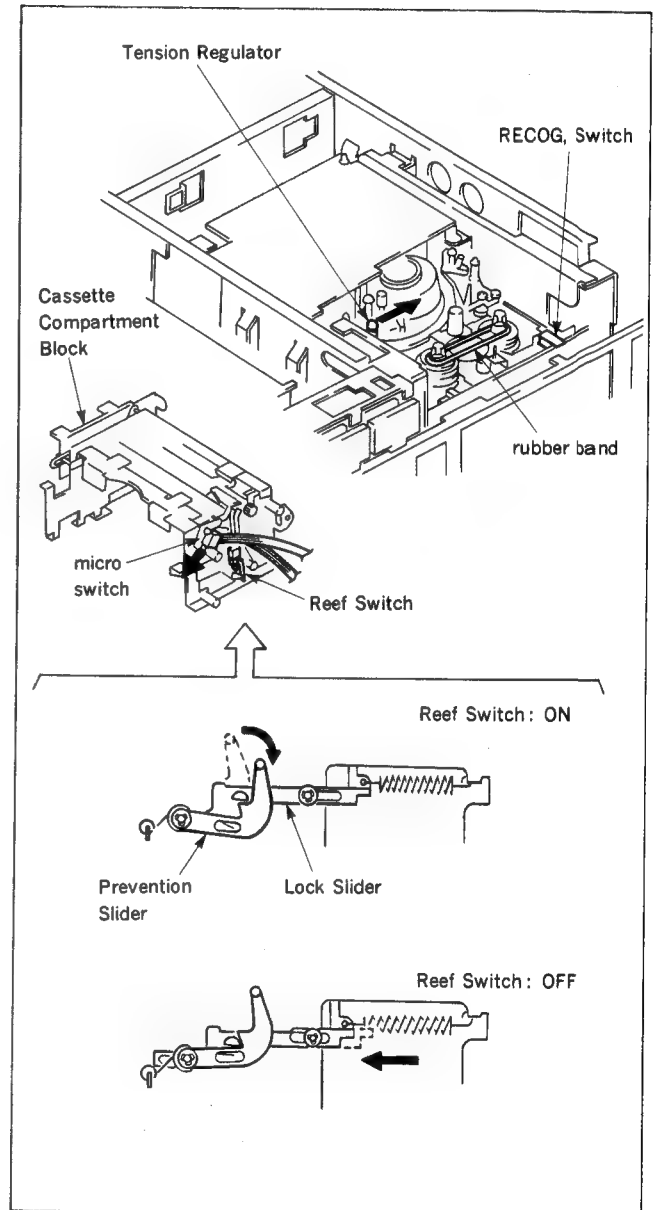
2. How to put the unit into the Playback or Recording mode.

- (1) Put the unit into the THREADING mode referring to the above procedures.
- (2) Hook a rubber band between S Reel table and T Reel Table.
- (3) Press the REC or PLAY Button of the Key Panel. When the T Reel Table starts rotating, press the Tension Regulator Arm Assembly in the direction of the arrow. Then the Tension Regulator Band is released and the S Reel Table Starts turning.
- (4) How to put the unit into the STOP mode, press the STOP key of the Key Panel.

3. How to put the unit into the EJECT mode.

- (1) Press the EJECT Button of the Key Panel.

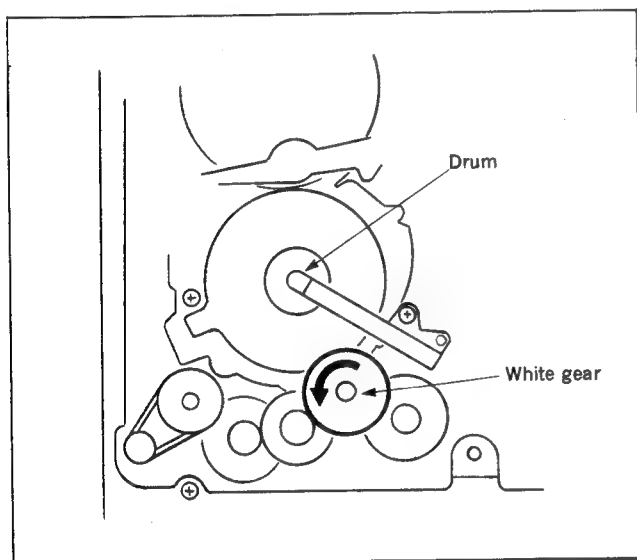
Note: It is possible to operate (REC, PLAY STOP, EJECT etc.) the unit with switches on the MB-19 Board in stead of using buttons of the Key Panel. If turn the POWER Switch on the MB-19 Board to OFF, the unit can not be operated.



2-14. CASSETTE TAPE REMOVAL PROCEDURE WHEN NORMAL EJECTION IS NOT POSSIBLE

I. When the winding cassette tape can not be removed from the Drum.

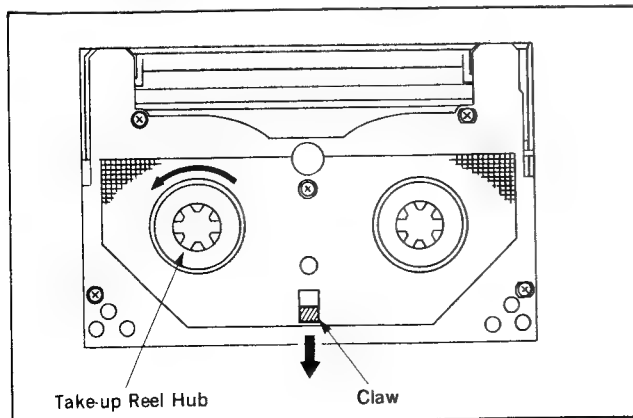
- (1) Remove the Top Panel and remove the Bottom Plate referring to Section 2-1.
- (2) Turn the white gear near the Drum counter-clockwise and release the winding tape from the Drum.



- (3) The cassette tape remains inserting and remove the Cassette-up Compartment Block referring to Section 2-3.

At this time, be careful that the tape is not hooked to the Mecha-block.

- (4) Turn the Take-up Reel Hub counterclockwise while pushing the claw of the back of the cassette in the direction of arrow. Wind up the tape into the cassette by hand.



- (5) Remove the cassette tape from the Cassette-up Compartment Block.

There are two ways as follows:

1. Turn the Worm Gear in the direction of the arrow for releasing the lock of the Cassette Holder while pushing the Lock Slider in the direction of the arrow by hand. (fig.1) Then the Cassette Holder gradually rises and the cassette tape is ejected.

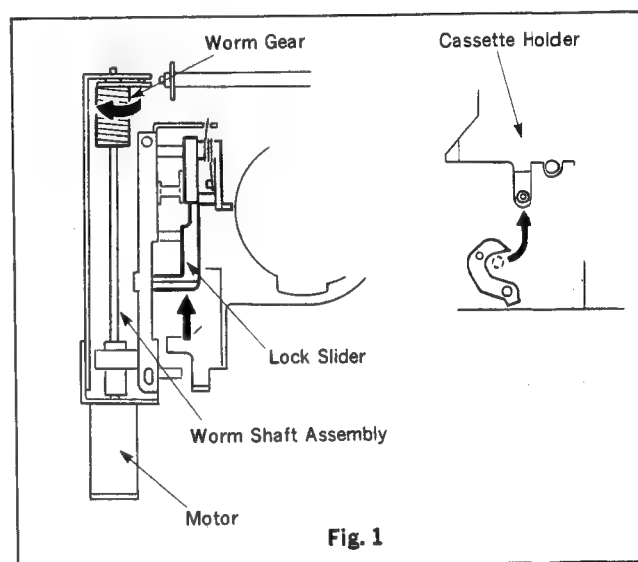


Fig. 1

2. Remove the two fixing screws and remove the Motor Bracket, Motor and Worm Shaft Assembly. Push the Lock Slider in the direction of the arrow as shown in figure 1. Raise the Cassette Holder by hand and the cassette tape is ejected.

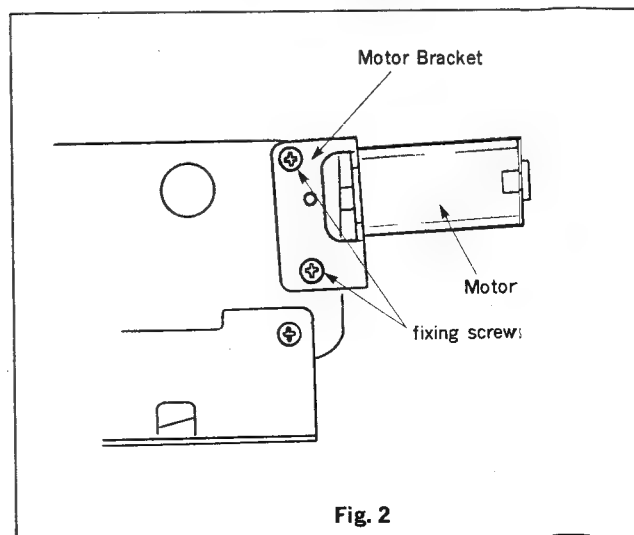

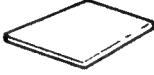

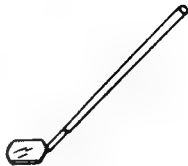
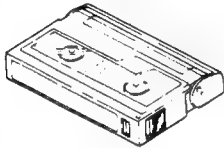
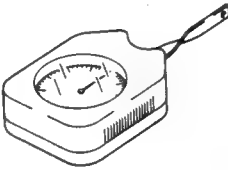


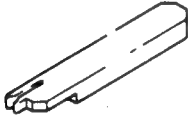


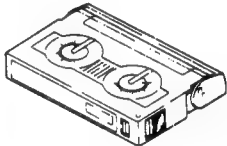
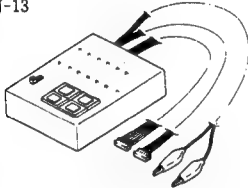
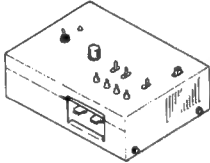
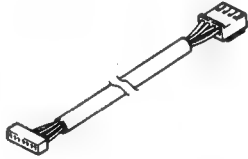
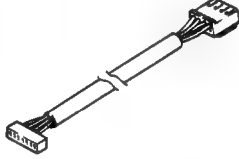
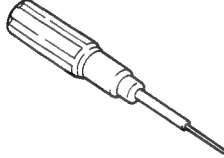


Fig. 2

2-15. FIXTURE

Ref. No.	Parts No.	Description	Application
J-1	Y-2031-001-1	Cleaning Fluid	Cleaning
J-2	7-741-900-53	Wiping Cloth	Cleaning
J-3	Commercially sold	Head Degausser	Head degauss adjustment
J-4	J-6080-840-A	Small Adjustment Mirror	
J-5	8-967-995-07	Alignment Tape, WR5-1CP	Tape path adjustment
	8-967-995-18	Alignment Tape, WR5-7CE	Video frequency response adjustment
	8-967-995-47	Alignment Tape, WR5-4CSP	Video adjustment
	8-967-995-48	Alignment Tape, WR5-8CSE	Serve, audio and video adjustment (SP)
	8-967-995-57	Alignment Tape, WR5-8CLE	Servo, audio and video adjustment (LP)
	8-967-992-17	Alignment Tape, WR2-3CS	Switching position adjustment
J-6	J-6080-827-A	Dial Tension Gauge	Measurement of torque
J-7	J-6080-831-A	Tension Measurement Reel	FWD Back tension adjustment
J-8	J-6080-832-A	Tension Measurement Reel	Brake torque check
J-9	J-6080-823-A	No. 10 Gear Phase Tool	Threading ring assembly replacement
J-10	J-6080-826-A	No. 6 Guide Lock Screwdriver	Tape path adjustment
J-11	—	Rotary Drum Tool (packed with the Rotary Upper Drum for repair)	Rotary upper drum replacement
J-12	J-6080-824-A	FWD, RVS Winding Torque Cassette	S·T reel table winding torque check
J-13	J-6080-825-A	Mode Selector	Mechanical check, adjustment and replacement
J-14	J-6080-891-A	Track Shift Tool	Tape path adjustment
J-15	J-6080-883-A	RE/SWP Connector	Tape path adjustment
J-16	J-6080-884-A	CTL Connector	Tape path adjustment
J-17	7-700-766-01	Hexagonal Screwdriver (0.89 mm)	Tape path adjustment

J-1 	J-2 	J-3 	J-4 
J-5 	J-6 	J-7 	J-8 
J-9 	J-10 	J-11 (Packed with the rotary upper drum for repair) 	J-12 
J-13 	J-14 	J-15 	J-16 
J-17 			

2-16. DIAL MENU OPERATION

The system controls (Still Timer, Preroll Time, etc.) initially set at the factory can be arbitrarily modified using the SEARCH dial, MENU button, DATA button, and SET button.

The dial menu has the following functions:

- . BASIC FUNCTION
- . ENHANCED FUNCTION

2-16-1. Button and Dial Settings

Search dial: Selects the ITEM, Modifies the DATA, Moves the cursor.

MENU button: Selects the ITEM when used with a SEARCH dial.

DATA button: Modifies the DATA when used with a SEARCH dial.

SET button : Writes the DATA into the memory.



2-16-2. Operation

Put the unit into DIAL MENU operation mode

The DIAL MENU operation data appears on the Front Panel's time counter display and monitor television (the video signals should be connected to the VIDEO IN connector and the monitor television should be connected to the MONITOR OUT connector on the Connector Panel).

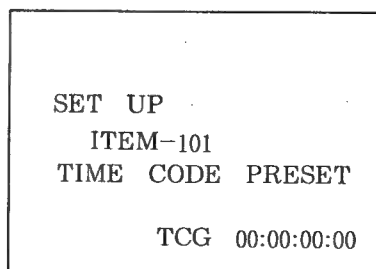
- (1) Set the REMOTE/LOCAL switch on the Front Panel to LOCAL.
- (2) Put the unit into JOG mode (when the SHUTTLE lamp is on, press the SEARCH dial).
- (3) Press the STOP button and put into the STOP mode or PLAY PAUSE mode.
- (4) Set the CTL/TC/DIAL MENU switch on the Front Panel to DIAL MENU.

The unit is put into the DIAL MENU mode and the ◁□▷ lamp at the top of the SEARCH dial lights.

time counter display



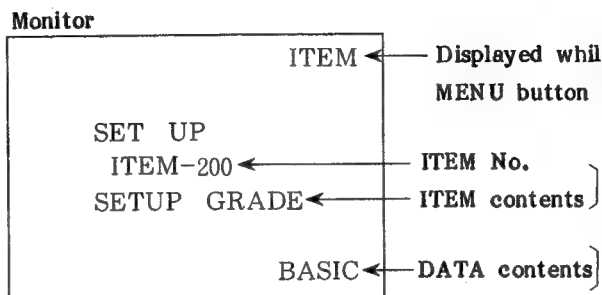
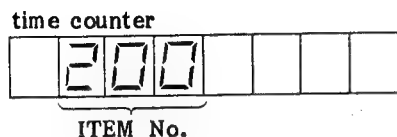
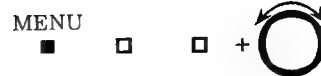
Monitor



(NOTE) The VTR cannot be operated normally in the DIAL MENU operation mode.

Select the ITEM

(5) Turn the SEARCH dial while pressing the MENU button.



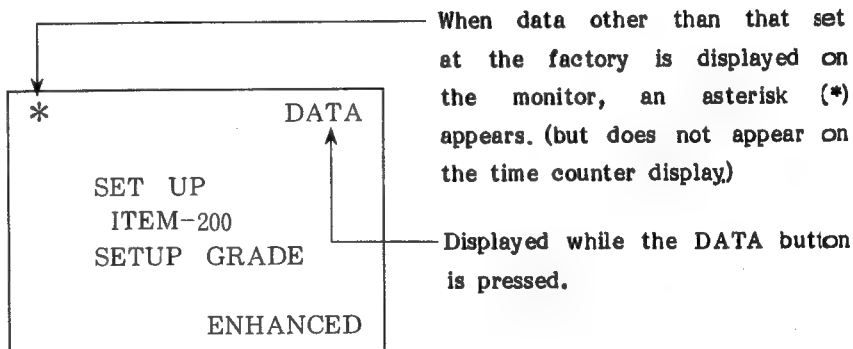
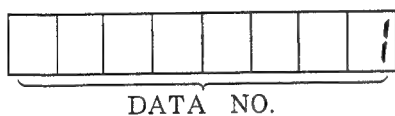
When the SEARCH dial is turned, the ITEM No. and contents are changed. The data corresponding to the ITEM No. are displayed.

(6) Stop the dial when the desired ITEM is displayed, and then release the MENU button.

When the DATA No. on the time counter display and DATA contents on the monitor blink, they can be modified as following method.

Modify the data

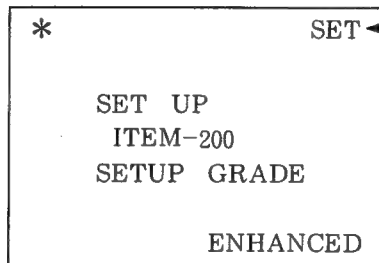
(7) Turn the dial while pressing the DATA button.



(8) Stop the dial when the desired data is displayed, and release the DATA button.

Set the data

(9) Press the SET button.



Displayed while the SET button is pressed. (For ITEM No. 101 is displayed only when data is set.)

- . The displayed data is written into the memory, the data remains unchanged even if the POWER switch is turned OFF.
- . If the updated data is set, the <□> lamp at the top of the SEARCH dial flashes for one second when the SET button is pressed. The DATA No. and DATA content blinking stops at that time.

2-16-3. ITEM/DATA

(1) BASIC FUNCTION

ITEM		DATA		ITEM and DATA Description
ITEM No. time counter	ITEM content monitor display	DATA No. time counter	DATA content monitor display	
101	TIME CODE PRESET	00000000 } 23595929	TCG00:00:00:00 } TCG23:59:59:29	Time code setting. 00H00M00S00Fr through 23H59M59S29Fr can be set. Factory setting: DATA No. 00000000 (TCG 00 : 00 : 00 : 00)
105	CHARACTER POSITION	0 } 15	OFF 1 } 15	Set the character position that is super-imposed on the monitor (only the vertical direction). When set to OFF, the character is not displayed. Factory setting: OFF
106	CHARACTER SIZE	0 1	SMALL LARGE	Set the character size that is displayed on the monitor. Factory setting: DATA No.0 (SMALL)
200	SETUP GRADE	0 1	BASIC ENHANCED	DATA No. 0 BASIC: Enable to select ITEM from 101 to 200 in the DIAL MENU operation. DATA No. 1 ENHANCED: Enable to select ITEM from 101 to 227 in the DIAL MENU operation. Factory setting: DATA No. 0 (BASIC)

Setting the data in the ITEM No.101

(NOTE).Select the TIME CODE SLAVE MODE in the ITEM No. 227.

1. Turn the SEARCH dial and blink the desired digit.



2. Turn the dial while pressing the DATA button to set the desired figures.



3. Repeat the steps 1, 2 to set the desired figures.
4. When completed, press the SET button.



(2) ENHANCED FUNCTION

The ENHANCED FUNCTION can be used by setting data to ENHANCED in the ITEM No. 200.

ITEM		DATA		ITEM and DATA Description
ITEM No. time counter	ITEM content monitor display	DATA No. time counter	DATA content monitor display	
201	ERROR STATUS	Error 02 Error 10 Error 20 Error 21 Error 22 Error 90 Error 99	NONE TAPE SLACK HUMID SYSTEM ERROR SYSTEM ERROR 50	Self-diagnostic function. When trouble occurs during normal operation, message "ERROR CODE" appears on the Front Panel's time counter display in any mode. When the unit is put into the DIAL MENU mode to select this ITEM, error status corresponding to the error code are displayed on the monitor. (Refer to Section 2-17-4 for further details.) NOTE: The ITEM data content cannot be modified. Normal operation :(NONE)
205	HOUR METER (DRUM)	00000 15000	00000H 15000H	Displays the rotation time of the upper drum. Head replacement can be decided at that time. Up to from 0H to 15000H can be displayed. NOTE: The ITEM data content cannot be modified.
206	HOUR METER	00000 15000	00000H 15000H	Displays the total time of the power on sequence. Up to from 0H to 15000H can be displayed. NOTE: The ITEM data content cannot be modified.
207	STILL TIMER	00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15	0.5 SEC. 1 SEC. 5 SEC. 10 SEC. 20 SEC. 30 SEC. 40 SEC. 50 SEC. 1 MIN. 2 MIN. 3 MIN. 4 MIN. 5 MIN. 6 MIN. 7 MIN. 7 MIN.	The unit automatically enters the tape PROTECTION mode after it has been in the tape STOP (or STILL) mode for a fixed time to prevent the video head from clogging (to reduce the tape damage). This item sets the transition time of the tape STOP to tape PROTECTION mode. The time can be set from 0.5 seconds to 7 minutes. Factory setting : DATA No. 15 (7 MIN)

ITEM		DATA		ITEM and DATA Description
ITEM No. time counter	ITEM content monitor display	DATA No. time counter	DATA content monitor display	
209	SELECTION FOR SEARCH DIAL ENABLE	0 1	DIAL DIRECT VIA SEARCH BUTTON	<p>When the SEARCH dial is turned or the SEARCH button is pressed, the unit enters the SEARCH mode. This item sets entering the SEARCH mode.</p> <p>DATA No. 0 DIAL DIRECT : When the SEARCH dial is turned, the unit enters the SEARCH mode from any mode other than REC/EDIT.</p> <p>DATA No. 1 VIA SEARCH BUTTON : When the SEARCH button is pressed, the unit enters the SEARCH mode.</p> <p>Factory setting : DATA No.1 (VIA SEARCH BUTTON)</p>
214	PREROLL TIME	00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15	0 SEC. 1 SEC. 2 SEC. 3 SEC. 4 SEC. 5 SEC. 6 SEC. 7 SEC. 8 SEC. 9 SEC. 10 SEC. 11 SEC. 12 SEC. 13 SEC. 14 SEC. 15 SEC.	<p>Sets the preroll time during editing. The preroll time can be set from 0 to 15 seconds.</p> <p>Factory setting : DATA No. 05 (5 SEC)</p>
218	PINCH ON DELAY	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	<p>Adjusts the time required from PLAY command sending to tape transport.</p> <p>Factory setting : DATA No. 3 (3)</p>

ITEM		DATA		ITEM and DATA Description
ITEM No. time counter	ITEM content monitor display	DATA No. time counter	DATA content monitor display	
224	TAPE PROTECTION MODE	0 1	STEP FWD LONG PAUSE	<p>When the time in the SEARCH STILL mode set using ITEM No. 207 passes, selects the mode setting.</p> <p>DATA No. 0 STEP FWD : The tape is sent repeatedly for one second at 1/30 times normal speed in the forward direction.</p> <p>DATA No. 1 LONG PAUSE : Enters the LONG PAUSE mode.</p> <p>Factory setting : DATA No. 0 (STEP FWD)</p>
226	DIGITAL CNR LEVEL	0 1 2	OFF 1 2	<p>Croma Noise Reduction OFF</p> <p>1 : minimum 2 : maximum</p> <p>Factory Setting : DATA No. 2 (2)</p>
227	TIME CODE SLAVE MODE	0 1	OFF ON	<p>ON : When straining the record from portion which the time code has already recorded, the time code is recorded continuously.</p> <p>When starting the record from portion which the time code is not recorded, it is recorded from "00 : 00 : 00"</p> <p>OFF : The time code is recorded from the Time Code Preset Data which is set by menu 101.</p> <p>Factory Setting : DATA No. 1 (ON)</p>

2-16-4. System Error

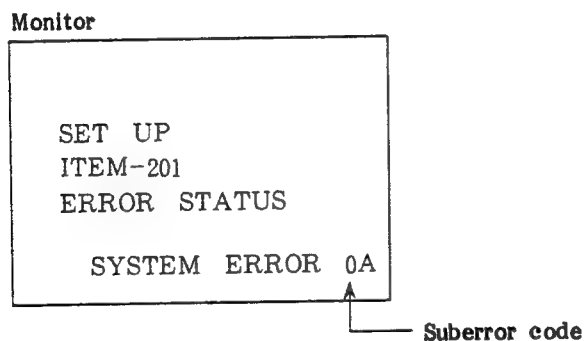
When a trouble occurs during normal operation and an error code appears on the time counter display of the Front Panel, the error status corresponding to the error code is displayed on the monitor by selecting the Item No. 201 on the dial menu. The error cause can be learned at that time.

Counter display	Monitor display	Description
Error 02	TAPE SLACK	Excessive tape tension
Error 10	HUMID	The condensation
Error 20	SYSTEM ERROR	Mechanical error. Distinguished by the suberror code. (Refer to the following.)
Error 21	——	RAM error when the POWER is ON.
Error 22	SYSTEM ERROR	Communication error between optional BKU-703A and the unit.
Error 90	——	Communication error between SY board and KY board.
Error 99	——	Lacking the 1/2 VD pulse to supply for the SY board.

(NOTE) Displayed on the time counter display about ERROR 21, 90, 99.

When Error 20 "SYSTEM ERROR" appears, a suberror code is displayed at the lower right corner on the monitor.

The suberror code is described below.



The suberror code is a two-digit hexadecimal number. Assume that the high-order digit is called Error 1 and the low-order digit called Error 0.

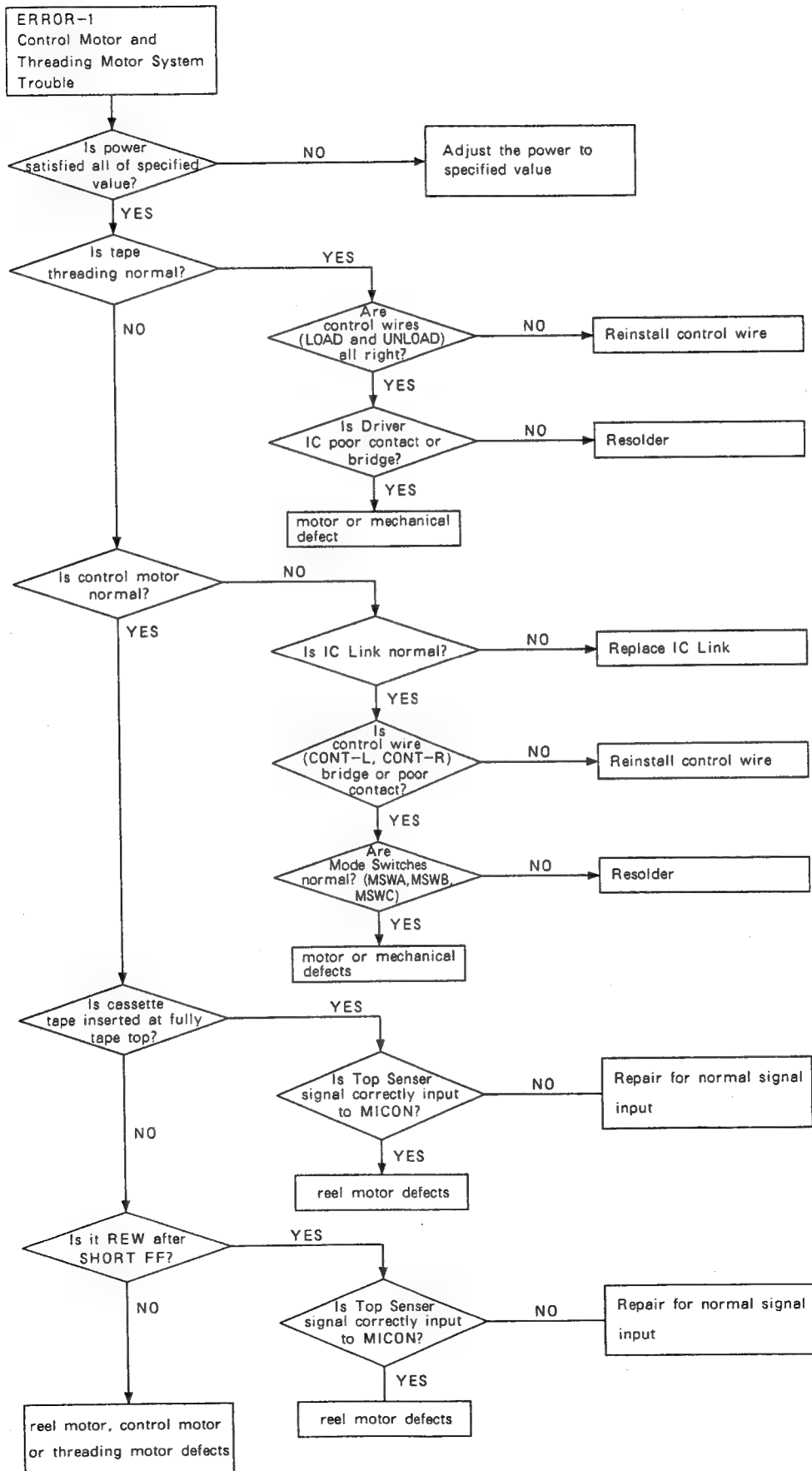
Error 0

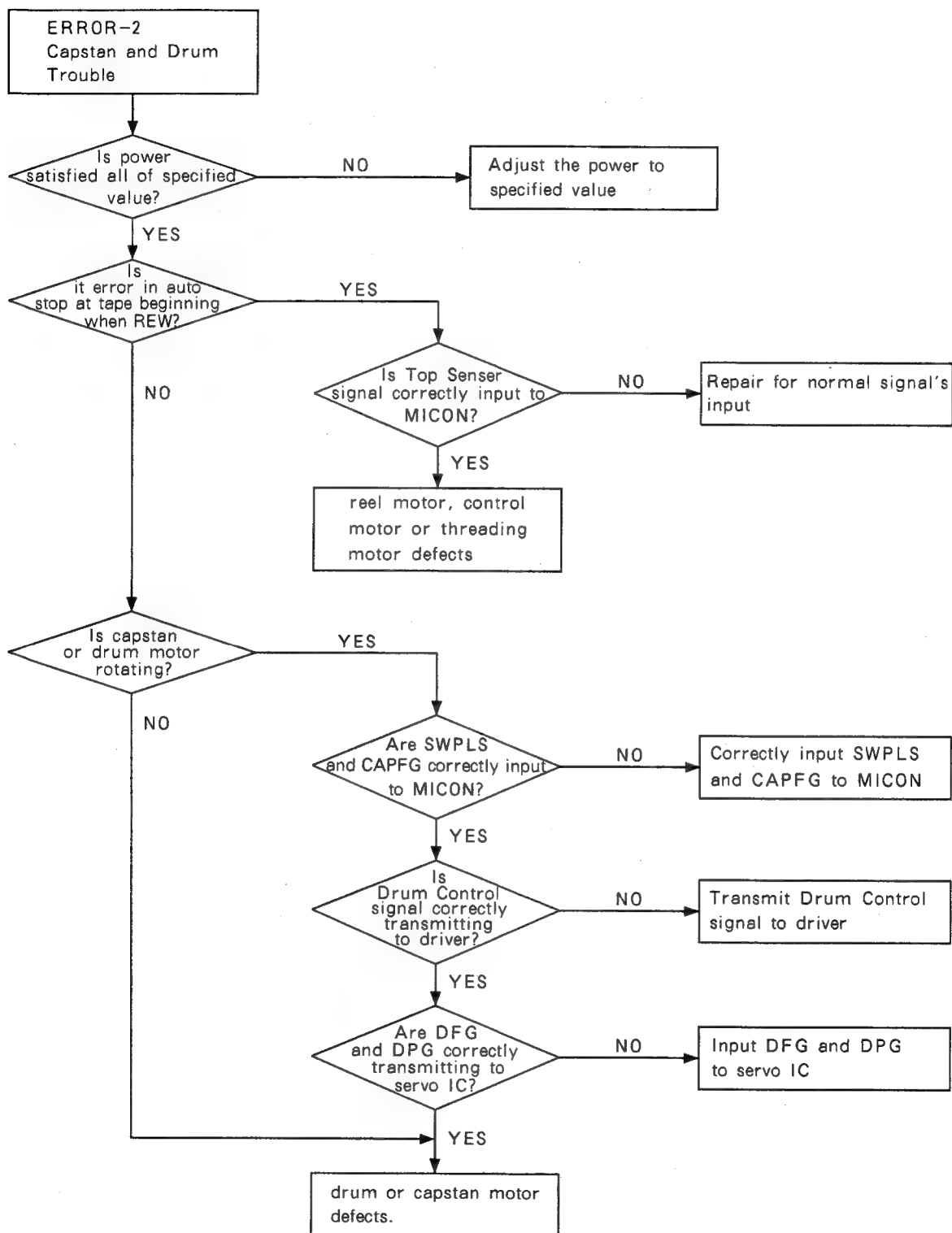
0	Normal operation
1	Control signal error of threading motor and control motor systems, error of reel motor, or communication error of TOP/END sensor.
2	Tape top error or control signal error of drum/capstan.
3	Error of Cassette-up Compartment, Cassette-up Motor, control line and mechanical switch.
4	Communication error between mechanical control and ATF control.
5	Communication error between microcomputer M1 and mechanical Block.

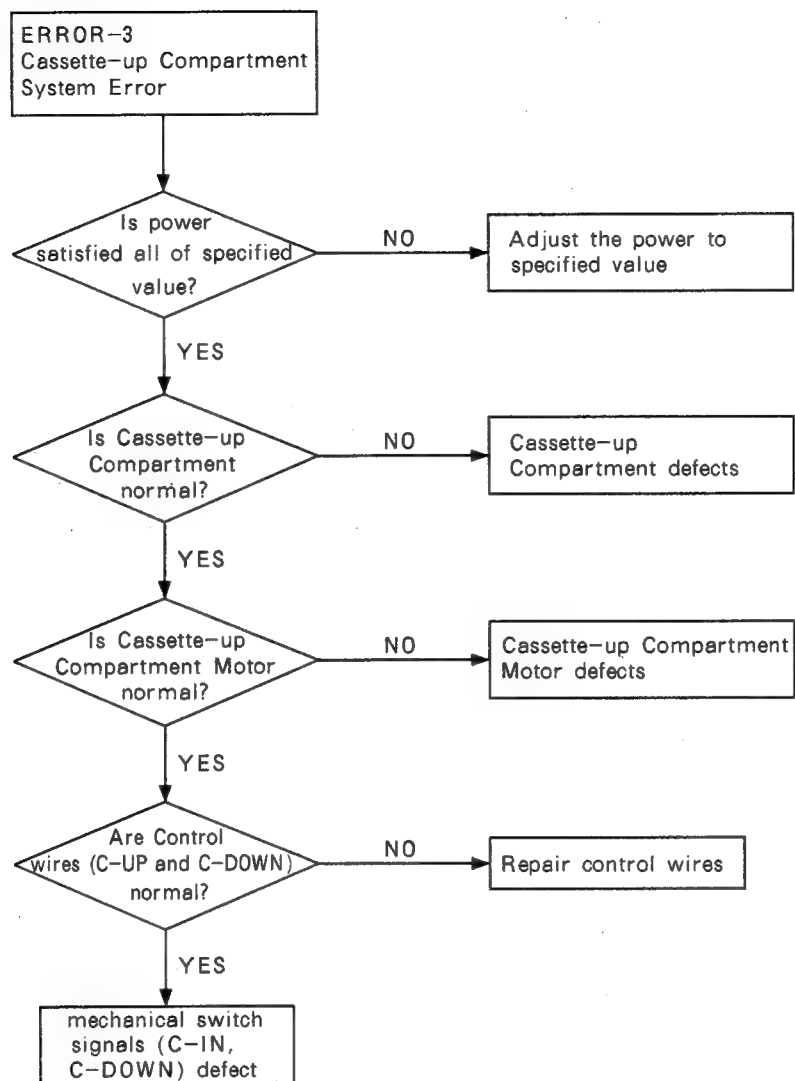
Error 1

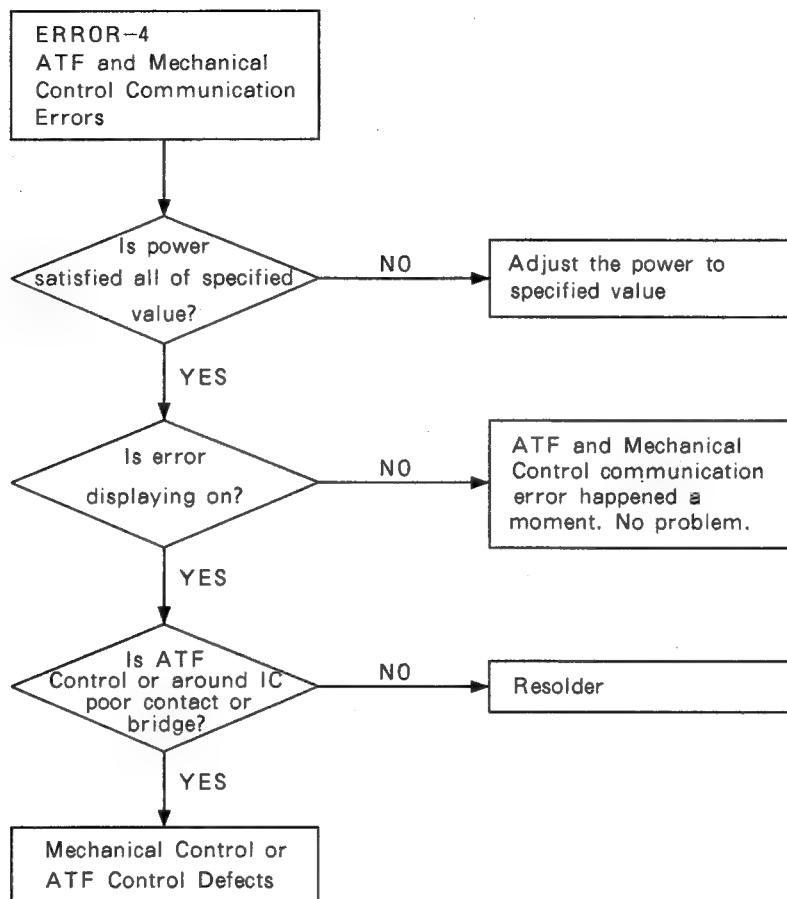
0	Normal operation
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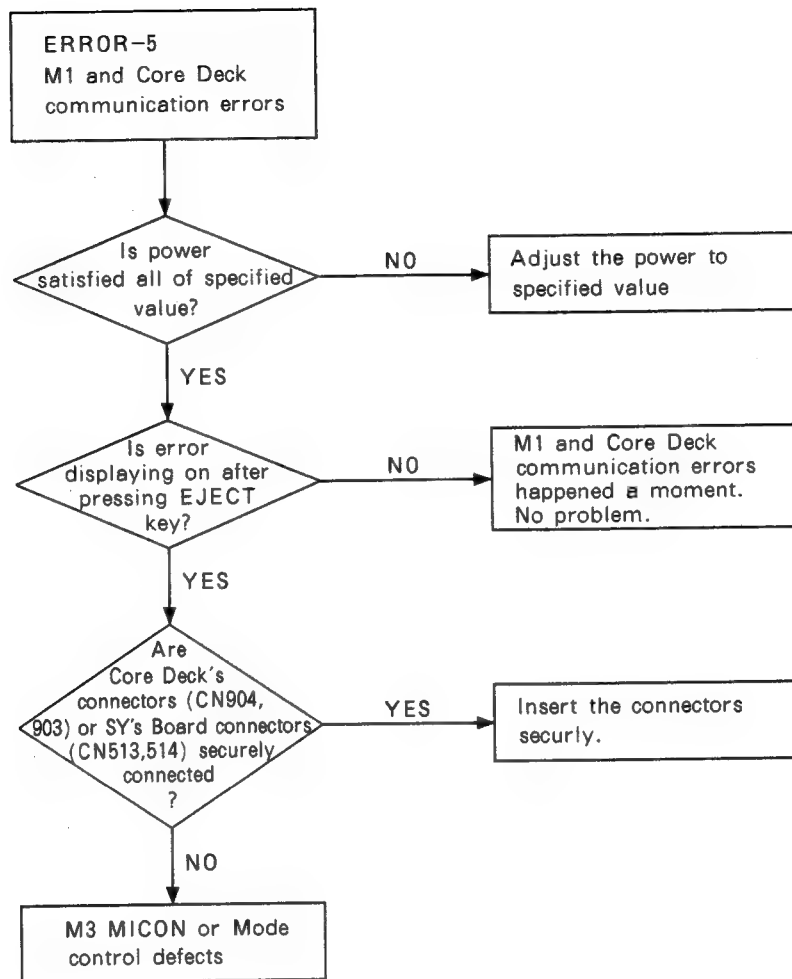
FLOW CHART











2-17. TIMING CHART

Movement modes about ※ 1 through ※ 6 in the Timing Chart are shown by these tables.

※ 1: Control Motor Control

Control Motor Rotating Direction	CONT L ← → CONT R								
	(clockwise direction)					(counterclockwise direction)			
Control Position (code)	EJECT	BLANK	LOAD/ UNLOAD	BLANK	FF/REW	BLANK	STOP	BLANK	FWD
Switch Input	(4)	(7)	(2)	(7)	(6)	(7)	(3)	(7)	(1)
CONT C (IC003 ⑭)	H	H	L	H	H	H	L	H	L
CONT B (IC003 ⑬)	L	H	H	H	H	H	H	H	L
CONT A (IC003 ⑫)	L	H	L	H	L	H	H	H	H

※ 2: Loading Motor Control

Control Motor Rotating Direction	Unthreading ← → Threading								
	LOADING TOP	BLANK	UNLOAD WAIT	BLANK	DRUM START	BLANK	T REEL START	BLANK	LOADING END
Motor Position (code)	(1)	(7)	(5)	(7)	(4)	(7)	(6)	(7)	(3)
Loading Switch Input									
LOAD SW C (IC003 ⑱)	L	H	H	H	H	H	H	H	L
LOAD SW B (IC003 ⑰)	L	H	L	H	L	H	H	H	H
LOAD SW A (IC003 ⑯)	H	H	H	H	L	H	L	H	H

※ 3: Casecon Motor Control Output

UP	DOWN	Motor Drive
L	L	No drive
L	H	Drives in down direction
H	L	Drives in up direction
H	H	Short brake

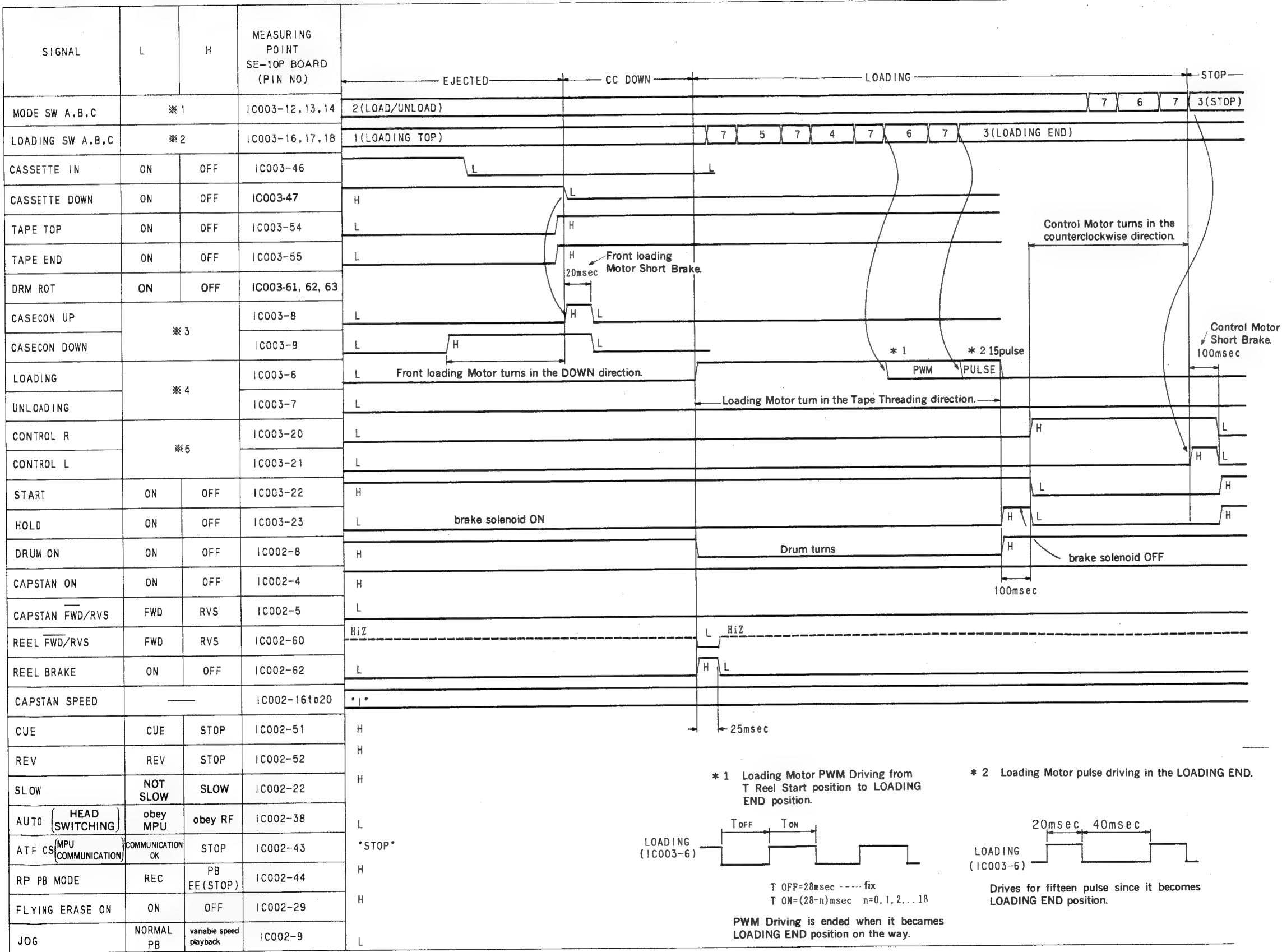
※ 5: Control Motor Output

CONT L	CONT R	Motor Drive
L	L	No drive
L	H	Drives the slider at a control position to the right
H	L	Drives the slider at a control position to the left
H	H	Short brake

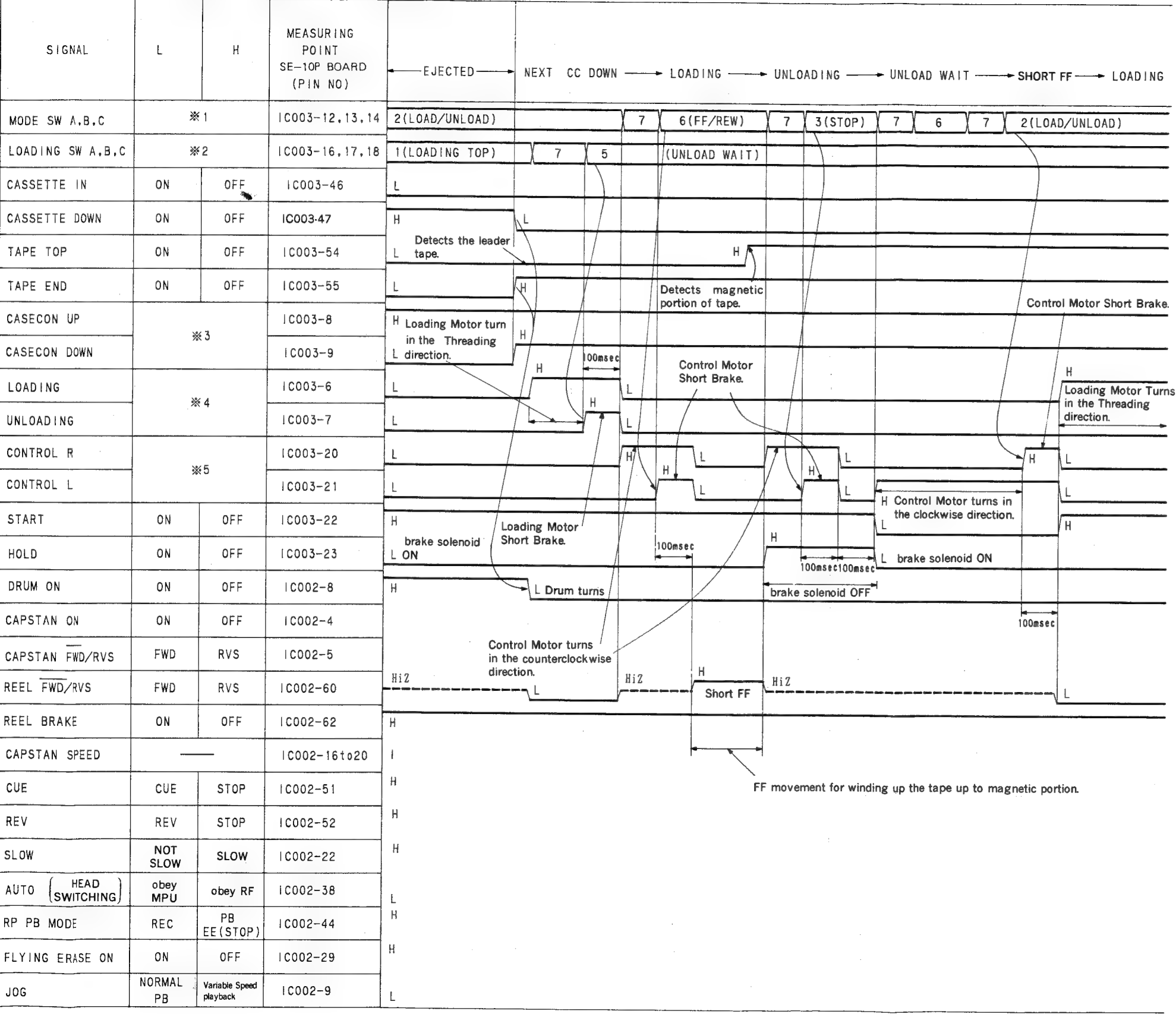
※ 4: Loading Motor Control Output

LOAD	UNLOAD	Motor Drive
L	L	No drive
L	H	Drives in unloading direction
H	L	Drives in loading direction
H	H	Short brake

1. EJECTED → CC DOWN → LOADING → STOP



2. EJECTED → CC DOWN → LOADING → UNLOADING → UNLOAD WAIT → SHORT FF → LOADING



SIGNAL	L	H	MEASURING POINT SE-10P BOARD (PIN NO)
MODE SW A,B,C	*1		IC003-12,13,14
LOADING SW A,B,C	*2		IC003-16,17,18
CASSETTE IN	ON	OFF	IC003-46
CASSETTE DOWN	ON	OFF	IC003-47
TAPE TOP	ON	OFF	IC003-54
TAPE END	ON	OFF	IC003-55
DRM ROT	ON	OFF	IC003-61, 62, 63
CASECON UP	*3		IC003-8
CASECON DOWN			IC003-9
LOADING	*4		IC003-6
UNLOADING			IC003-7
CONTROL R	*5		IC003-20
CONTROL L			IC003-21
START	ON	OFF	IC003-22
HOLD	ON	OFF	IC003-23
DRUM ON	ON	OFF	IC002-8
CAPSTAN ON	ON	OFF	IC002-4
CAPSTAN FWD/RVS	FWD	RVS	IC002-5
REEL FWD/RVS	ON	OFF	IC002-60
REEL BRAKE	ON	OFF	IC002-62
CAPSTAN SPEED			IC002-16to20
CUE	CUE	STOP	IC002-51
REV	REV	STOP	IC002-52
SLOW	NOT SLOW	SLOW	IC002-22
AUTO HEAD SWITCHING	obey MPU	obey RF	IC002-38
ATF CS MPU COMMUNICATION	COMMUNICATION OK	STOP	IC002-43
RP PB MODE	REC	PB EE(STOP)	IC002-44
FLYING ERASE ON	ON	OFF	IC002-29
JOG	NORMAL PB	Variable speed playback	IC002-9

STOP UNLOAD CC DOWN EJECTED

The timing diagram illustrates the sequence of operations during different states: STOP, UNLOAD, CC DOWN, and EJECTED. Key events include:

- STOP:** Control Motor turns clockwise; Loading Motor turns in unloading direction.
- UNLOAD:** Control Motor short brake; Front Loading Motor short brake.
- CC DOWN:** Control Motor turns counter-clockwise; Front Loading Motor turns UP.
- EJECTED:** Brake solenoid ON.

Additional notes from the diagram:

- "The tape is wound up by T Reel."
- "Control Motor Short Brake"
- "Front Loading Motor Short Brake"
- "Control Motor turns in the clockwise direction."
- "Control Motor turns in the counterclockwise direction."
- "Drum Turns."
- "H brake solenoid OFF"
- "H brake solenoid ON"

*** 1 Pulse Driving Timing (The number of pulse is eight.)**

UNLOAD (IC003-7) pulse timing: 20msec pulse width, 40msec period.

4. STOP \rightarrow PB

SIGNAL	L	H	MEASURING POINT SE-10P BOARD (PIN NO)
MODE SW A,B,C	※1		IC003-12, 13, 14
LOADING SW A,B,C	※2		IC003-16, 17, 18
CASSETTE IN	ON	OFF	IC003-46
CASSETTE DOWN	ON	OFF	IC003-47
TAPE TOP	ON	OFF	IC003-54
TAPE END	ON	OFF	IC003-55
RF SW PULSE			IC002-48, 49 IC003-48, 49
CAPSTAN FG			IC002-40
DRM ROT	ON	OFF	IC003-61, 62, 63
CASECON UP	※3		IC003-8
CASECON DOWN	※3		IC003-9
LOADING	※4		IC003-6
UNLOADING	※4		IC003-7
CONTROL R	※5		IC003-20
CONTROL L	※5		IC003-21
START	ON	OFF	IC003-22
HOLD	ON	OFF	IC003-23
DRUM ON	ON	OFF	IC002-8
CAPSTAN ON	ON	OFF	IC002-4
CAPSTAN FWD/RVS	FWD	RVS	IC002-5
REEL FWD/RVS	FWD	RVS	IC002-60
REEL BRAKE	ON	OFF	IC002-62
CAPSTAN SPEED			IC002-16 to 20
CUE	CUE	STOP	IC002-51
REV	REV	STOP	IC002-52
SLOW	NOT SLOW	SLOW	IC002-22
AUTO HEAD SWITCHING	obey MPU	obey RF	IC002-38
ATF CS MPU COMMUNICATION	COMMUNICATION OK	STOP	IC002-43
RP PB MODE	REC	PB EE (STOP)	IC002-44
FLYING ERASE ON	ON	OFF	IC002-29
JOG	NORMAL PB	Variable speed playback	IC002-9

STOP PB

*3" (STOP) *1" (FWD/RVS)

100msec

50msec

L drum turns

L capstan turns

Tape is wound up by T Reel.

While the brake Solenoid is operating, the blake is released by changing the mechanical mode from STOP to FWD/RVS. (The brake is kept releasing in FWD/RVS position).

5. STOP \rightarrow REC

SIGNAL	L	H	MEASURING POINT SE-10P BOARD (PIN NO)	STOP	REC
MODE SW A,B,C	※1		IC003-12,13,14	3	7 1
LOADING SW A,B,C	※2		IC003-16,17,18	3	
CASSETTE IN	ON	OFF	IC003-46	L	
CASSETTE DOWN	ON	OFF	IC003-47	L	
TAPE TOP	ON	OFF	IC003-54	L	
TAPE END	ON	OFF	IC003-55	L	
RF SW PULSE			IC002-48,49 IC003-48,49		
CAPSTAN FG			IC002-40		
DRM ROT	ON	OFF	IC003-61, 62, 63		
CASECON UP	※3		IC003-8	L	
CASECON DOWN			IC003-9	L	
LOADING	※4		IC003-6	L	
UNLOADING			IC003-7	L	
CONTROL R	※5		IC003-20	L	100msec
CONTROL L			IC003-21	L	
START	ON	OFF	IC003-22	H	
HOLD	ON	OFF	IC003-23	H	
DRUM ON	ON	OFF	IC002-8	H	L drum turns
CAPSTAN ON	ON	OFF	IC002-4	H	L capstan turns
CAPSTAN FWD/RVS	FWD	RVS	IC002-5	L	50msec
REEL FWD/RVS	FWD	RVS	IC002-60	Hiz	L Tape is wound up by T Reel.
REEL BRAKE	ON	OFF	IC002-62	H	Brake is released and change the mechanical mode. (Same as playback mode)
CAPSTAN SPEED			IC002-16 to 20	"I"	
CUE	CUE	STOP	IC002-51	H	
REV	REV	STOP	IC002-52	H	
SLOW	NOT SLOW	SLOW	IC002-22	H	
AUTO HEAD SWITCHING	obey MPU	obey RF	IC002-38	L	
ATF CS MPU COMMUNICATION	COMMUNICATION OK	STOP	IC002-43	"STOP"	
RP PB MODE	REC	PB EE (STOP)	IC002-44	H	L Start to record operation
FLYING ERASE ON	ON	OFF	IC002-29	H	L Start to Flying Erase Operation
JOG	NORMAL PB	Variable speed playback	IC002-9	L	

6. PB, X1 → X9

SIGNAL	L	H	MEASURING POINT SE-10P BOARD (PIN NO)	PB, x1	x9
MODE SW A,B,C	※1		IC003-12,13,14	1	
LOADING SW A,B,C	※2		IC003-16,17,18		
CASSETTE IN	ON	OFF	IC003-46		
CASSETTE DOWN	ON	OFF	IC003-47		
TAPE TOP	ON	OFF	IC003-54		
TAPE END	ON	OFF	IC003-55		
RF SW PULSE			IC002-48,49 IC003-48,49		
CAPSTAN FG			IC002-40		
DRM ROT	ON	OFF	IC003-61, 62, 63		
CASECON UP	※3		IC003-8		
CASECON DOWN			IC003-9		
LOADING	※4		IC003-6		
UNLOADING			IC003-7		
CONTROL H	※5		IC003-20		
CONTROL L			IC003-21		
START	ON	OFF	IC003-22	H	
HOLD	ON	OFF	IC003-23	H	
DRUM ON	ON	OFF	IC002-8	L	
CAPSTAN ON	ON	OFF	IC002-4	L	
CAPSTAN FWD/RVS	FWD	RVS	IC002-5	L	
REEL FWD/RVS	FWD	RVS	IC002-60	L	
REEL BRAKE	ON	OFF	IC002-62	H	
CAPSTAN SPEED			IC002-16 to 20	1	3 5 7 9
CUE	CUE	STOP	IC002-51	H	
REV	REV	STOP	IC002-52	H	
SLOW	NOT SLOW	SLOW	IC002-22	H	
AUTO (HEAD SWITCHING)	obey MPU	obey RF	IC002-38	L	
ATF CS (MPU COMMUNICATION)	COMMUNICATION OK	STOP	IC002-43	FWD PB	x3 x5 x7 x9
RP PB MODE	REC	PB EE(STOP)	IC002-44	H	
FLYING ERASE ON	ON	OFF	IC002-29	H	
JOG	NORMAL PB	Variable speed playback	IC002-9	L(H) PB	

Capstan speed is activated gradually from one time to nine times.

2frames 2frames 2frames

Servo Circuit CUE mode

Video circuit variable speed playback mode.

7. PB → X (-9)

SIGNAL	L	H	MEASURING POINT SE-10P BOARD (PIN NO)											
MODE SW A.B.C	※1		IC003-12,13,14	PB → x(-9)										
LOADING SW A.B.C	※2		IC003-16,17,18											
CASSETTE IN	ON	OFF	IC003-46											
CASSETTE DOWN	ON	OFF	IC003-47											
TAPE TOP	ON	OFF	IC003-54											
TAPE END	ON	OFF	IC003-55											
RF SW PULSE			IC002-48,49 IC003-48,49											
CAPSTAN FG			IC002-40											
DRM ROT	ON	OFF	IC003-61, 62, 63											
CASECON UP	※3		IC003-8											
CASECON DOWN			IC003-9											
LOADING	※4		IC003-6											
UNLOADING			IC003-7											
CONTROL R	※5		IC003-20											
CONTROL L			IC003-21											
START	ON	OFF	IC003-22											
HOLD	ON	OFF	IC003-23											
DRUM ON	ON	OFF	IC002-8											
CAPSTAN ON	ON	OFF	IC002-4	L										
CAPSTAN FWD/RVS	FWD	RVS	IC002-5	L										
REEL FWD/RVS	FWD	RVS	IC002-60	L										
REEL BRAKE	ON	OFF	IC002-62	H	L									
CAPSTAN SPEED			IC002-16 to 20	"I"										
CUE	CUE	STOP	IC002-51	H										
REV	REV	STOP	IC002-52	H										
SLOW	NOT SLOW	SLOW	IC002-22	H										
AUTO (HEAD SWITCHING)	obey MPU	obey RF	IC002-38	L										
ATF CS (MPU COMMUNICATION)	COMMUNICATION OK	STOP	IC002-43	PB	FWD	STILL	X(-1)	X(-3)	X(-5)	X(-7)				
RP PB MODE	REC	PB EE(STOP)	IC002-44	H										
FLYING ERASE ON	ON	OFF	IC002-29	H										
JOG	NORMAL PB	Variable speed playback	IC002-9	L	H	Video circuit variable speed playback mode								

Tape is stopped. Tape speed is activated gradually from minus one time to minus seven times.

2frames 2frames 2frames

L			
H			
H			
H			

3 5 7

Servo circuit REV mode

Tape is stopped. Tape speed is activated gradually from minus one time to minus seven times.

2frames 2frames 2frames

Servo circuit
REV mode

8. STOP → FF (REW)

SIGNAL	L	H	MEASURING POINT SE-10P BOARD (PIN NO)	STOP	FF (REW)
MODE SW A,B,C	※1		IC003-12,13,14	3	7 6
LOADING SW A,B,C	※2		IC003-16,17,18		
CASSETTE IN	ON	OFF	IC003-46		
CASSETTE DOWN	ON	OFF	IC003-42,47		
TAPE TOP	ON	OFF	IC003-54		
TAPE END	ON	OFF	IC003-55		
RF SW PULSE			IC002-48,49 IC003-48,49		
CAPSTAN FG			IC002-40		
DRM ROT	ON	OFF	IC003-61, 62, 63		
CASECON UP	※3		IC003-8		
CASECON DOWN			IC003-9		
LOADING	※4		IC003-6		
UNLOADING			IC003-7		
CONTROL R	※5		IC003-20	L	
CONTROL L			IC003-21	L	
START	ON	OFF	IC003-22		
HOLD	ON	OFF	IC003-23	H	
DRUM ON	ON	OFF	IC002-8	H	
CAPSTAN ON	ON	OFF	IC002-4	H	
CAPSTAN FWD/RVS	FWD	RVS	IC002-5	L	
REEL FWD/RVS	FWD	RVS	IC002-60	H1Z	(2.5V) PWM
REEL BRAKE	ON	OFF	IC002-62	H	PWM
CAPSTAN SPEED	※6		IC002-16 to 20	"I"	
CUE	CUE	REV	IC002-51	H	
REV	REV	STOP	IC002-52	H	
SLOW	NOT SLOW	SLOW	IC002-22	H	
AUTO (HEAD SWITCHING)	obey MPU	obey RF	IC002-38	L	
ATF CS (MPU COMMUNICATION)	COMMUNICATION OK	STOP	IC002-43	"STOP"	
RP PB MODE	REC	PB EE(STOP)	IC002-44		
FLYING ERASE ON	ON	OFF	IC002-29	H	
JOG	NORMAL PB	Variable speed playback	IC002-9	L	

Mechanical mode is changed from STOP to FF/REW position by Control Motor.

It is necessary to operate the brake Solenoid in FF/REW position for releasing the brake.

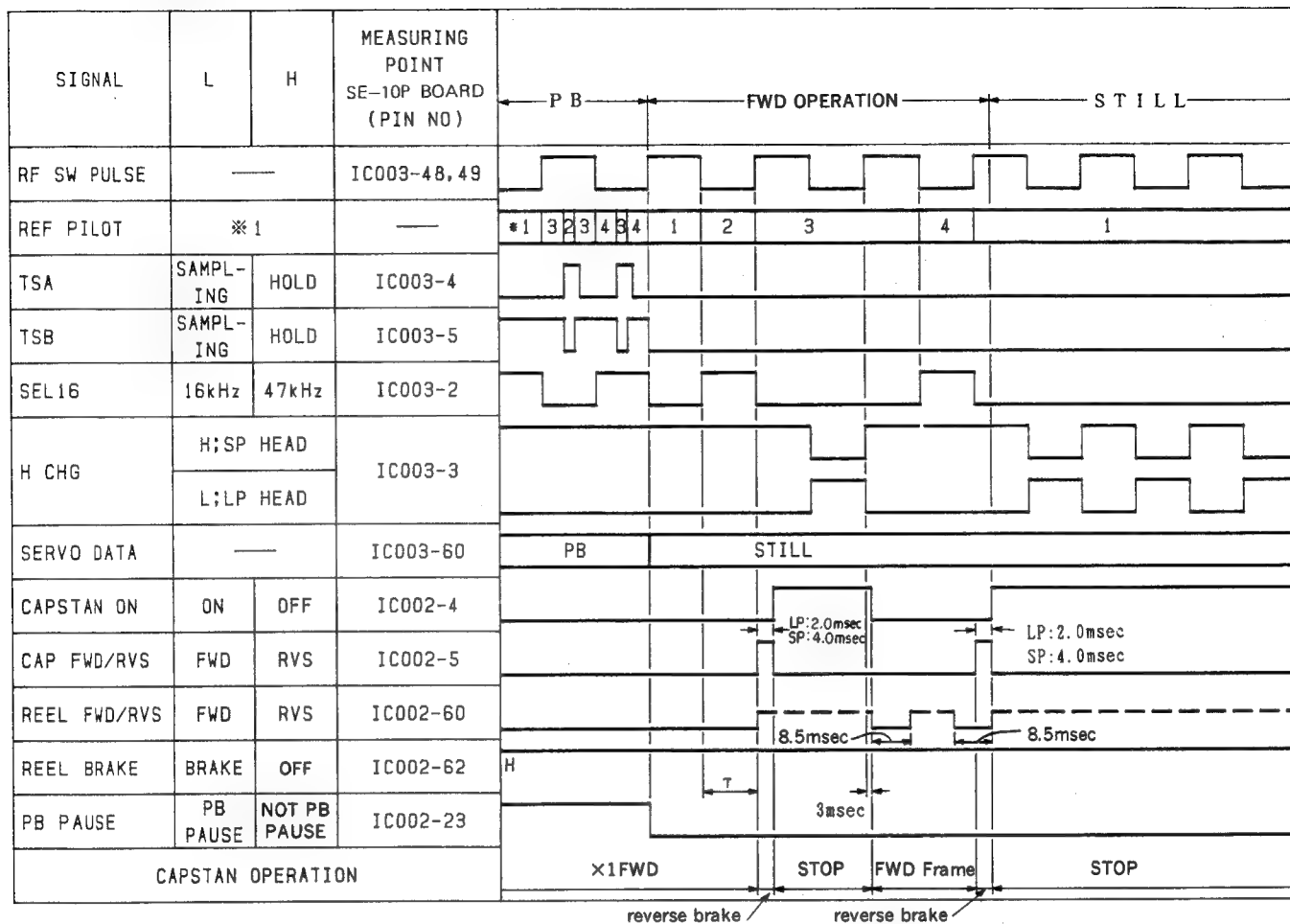
100msec

brake solenoid on

drum turns

Tape speed is activated gradually by PWM Drive.

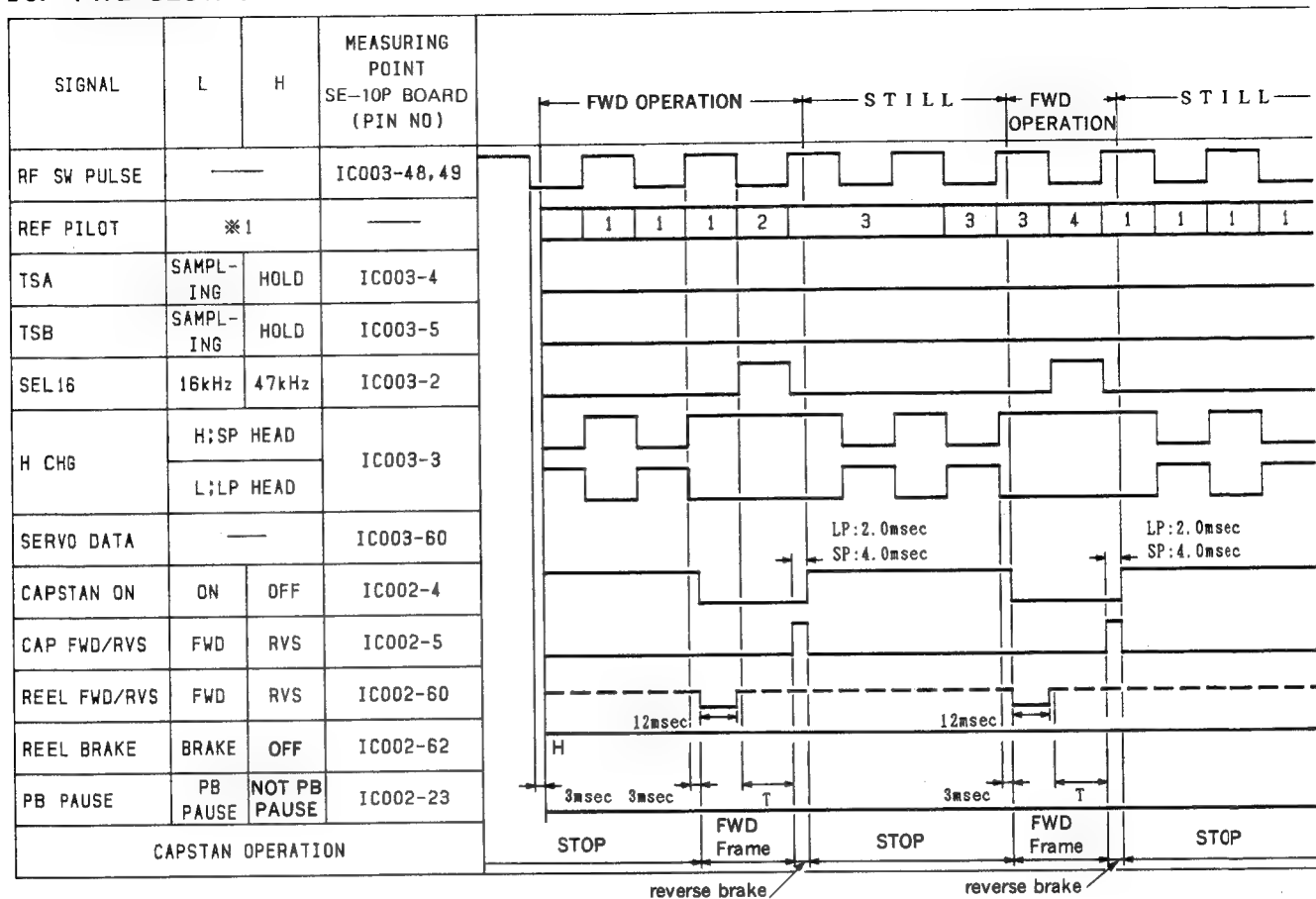
9. PB → STILL



(※1) Selects the REF PILOT Frequency by SEL1 (IC003-④) and SEL2 (IC003-②). T=5.0—21.0msec Center 13.0msec

FREQUENCY	SEL 1	SEL 2
1	H	H
2	L	H
3	H	L
4	L	L

10. FWD SLOW or FWD FRAME



(* 1) Selects the REF PILOT Frequency by SEL1 (IC003-④) and SEL2 (IC003-②).

FREQUENCY	SEL 1	SEL 2
1	H	H
2	L	L
3	H	L
4	L	L

reverse brake
FWD operation

T = 8.5-24.5msec
Center 15.5msec

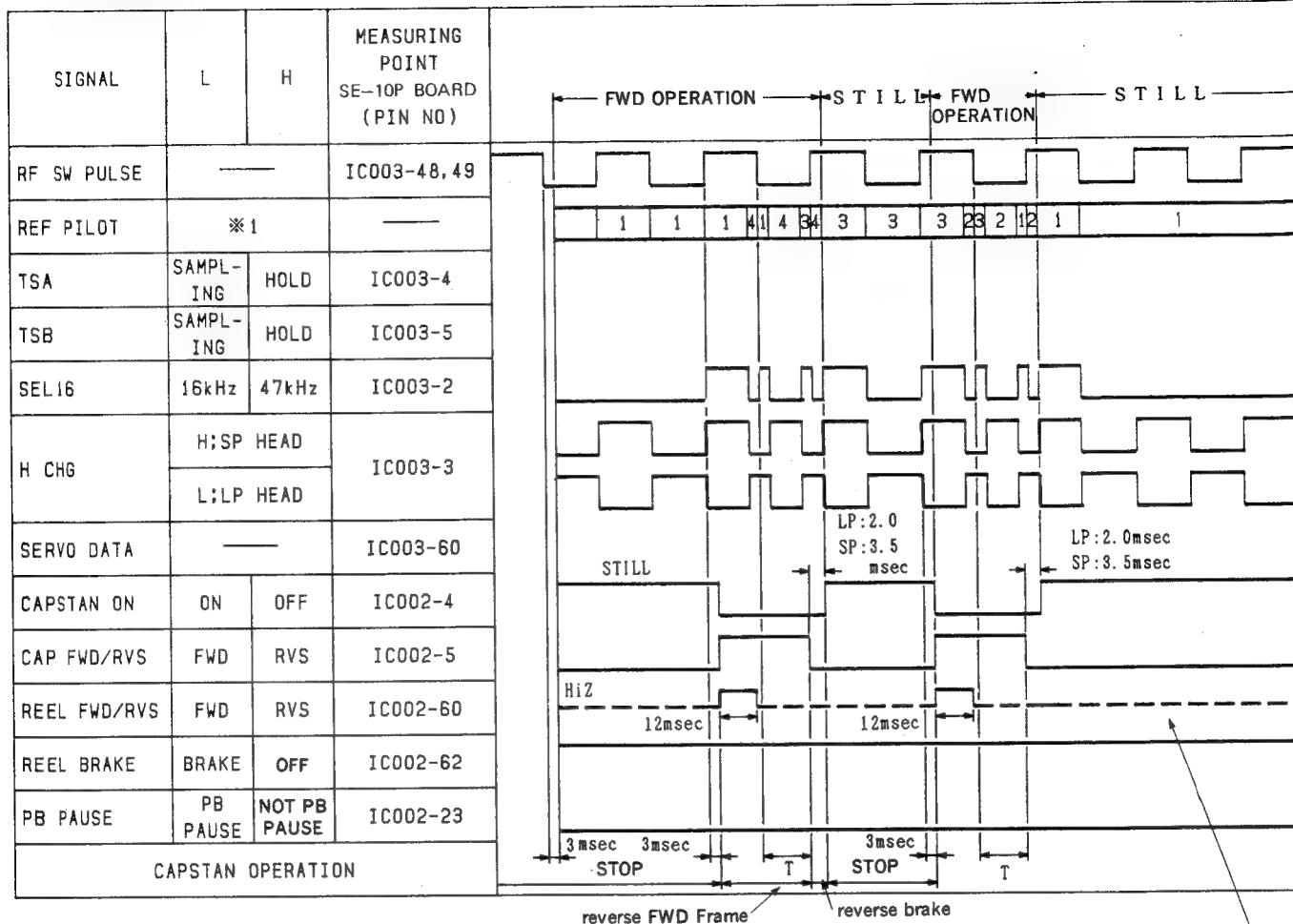
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reverse brake reverse reverse brake

T=5.0-21.0msec
Center 13.0msec

2-40

12. RVS SLOW or RVS FRAME



(* 1) Selects the REF PILOT Frequency by SEL1 (IC003-⑥) and SEL2 (IC003-②).

Reel control becomes dotted line when
STILL/PB PAUSE → RVS SLOW/FRAME.
T=8.5-24.5msec
Center 16.5msec

FREQUENCY	SEL 1	SEL 2
1	H	H
2	L	L
3	H	L
4	L	L

SECTION 3

PERIODIC CHECK AND MAINTENANCE

It is recommended that the following periodic check and maintenance schedule are employed in order to obtain maximum performance of the unit and longer tape life.

3-1. MAINTENANCE AFTER REPAIRS

Perform the following maintenance after repair regardless the operating hours of the unit.

(1) Cleaning of the Rotary Upper Drum

- Press the cleaning piece moistend with cleaning fluid lightly against the Rotary Upper Drum and turn slowly the Upper Drum counterclockwise with a hand.

Note: Never turn the Upper Drum by the electric power and never turn the Upper Drum clockwise with a hand. Never move the cleaning piece in the vertical direction of head tips in the cleaning. It tends to damage the video head tips. Please follow the instruction above for cleaning.

2) Cleaning of Tape Running System (fig.1)

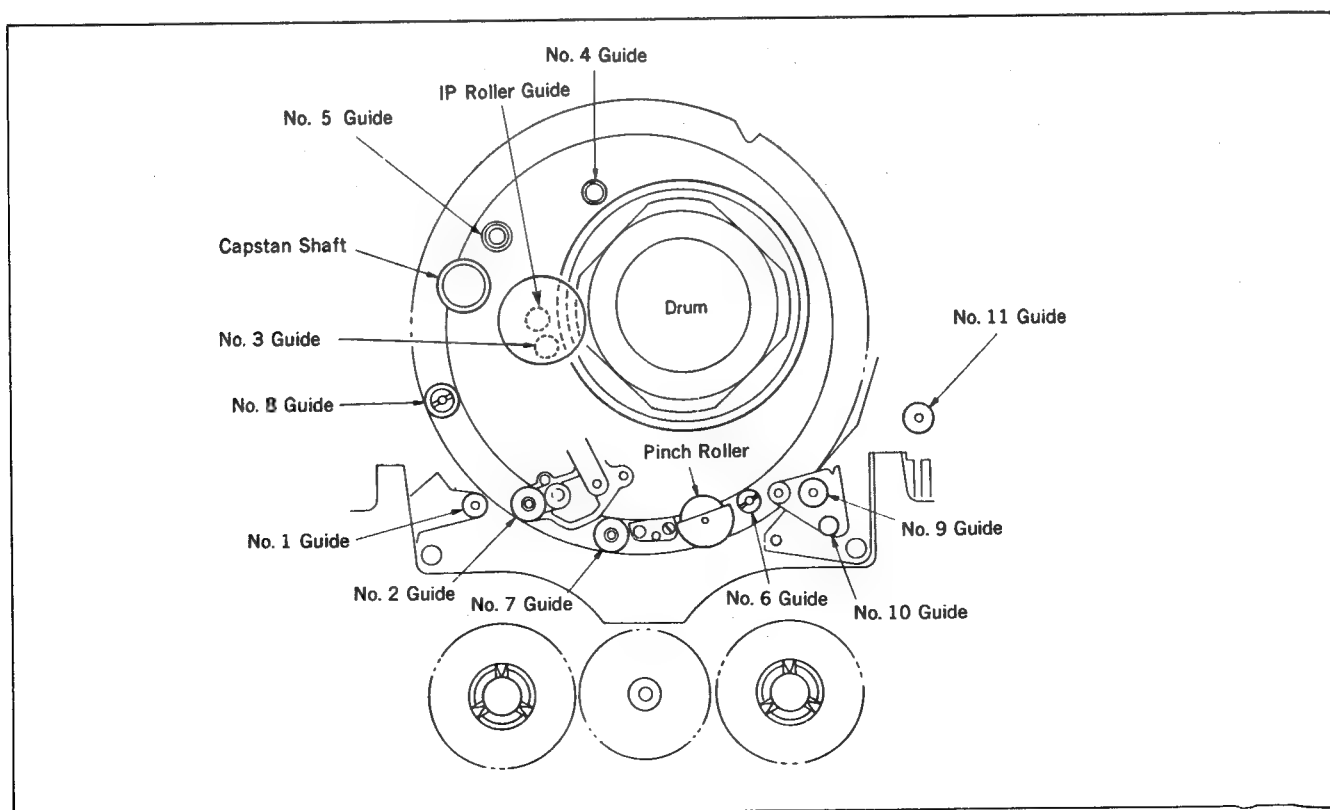
- Put the cassette compartment into the EJECT completion mode and clean the tape running system (No.1 thru No.11 Guides, Capstan Shaft, Pinch Rolloer and IP Roller Guide) with cleaning piece moistend with the clearing the fluid.

(3) Cleaning of Drive System

- Clean the Drive system (reel table surface, belt and timing belt) with cleaning piece moistend with the cleaning fluid.

3-2. PERIODIC CHECK

Perform the maintenance checks described separately in accordance with the operational hour of the unit.



3-3. HOURS METER

The Time Counter of the Front Panel can display the accumulated rotation time of the Upper Drum and the accumulated power-on time.

How to put the Time Counter Display into the Hours Metermode, please refer to Section 2-16.

The Hours Meter has two display modes as follows:

MENU No.205: HOURS METER (DRUM)

Rotation time of the Upper Drum

MENU NO.206: HOURS METER

Power-on time

The periodic check and maintenance use MENU No.205.

Refer to the next page for the periodic check list.

○ : Cleaning ◆ : Replacement ◇ : Checking ■ : Oiling

Location			Hours of Use (H) : MENU No.205 (Drum rotation)										Reference Section
	Parts Name	Parts No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Tape Path	Tape Path surface	—	○	○	○	○	○	○	○	○	○	○	3-1
	Upper Drum Ass'y (DGR-68-R)	A-7049-328-A	○	◆	○	◆	○	—	○	◆	○	◆	4-2
	Drum Ass'y (DGH-68A-R)	A-7048-389-A	○	○	○	○	○	◆	○	○	○	○	4-3
	Pinch Roller Arm Ass'y	X-3686-648-1	○	◆	○	◆	○	◆	○	◆	○	◆	4-5
	(Note 4 :) Capstan motor	8-835-364-01	—	■	—	■	—	◆	—	■	—	■	—
Drive System	Threading motor belt	3-686-546-01	◇	◇	◇	◆	◇	◇	◇	◆	◇	◇	4-7
	Blake plunger	1-454-377-31	—	—	—	○	—	—	—	○	—	—	4-20
	Threading motor	A-7040-065-A	—	—	—	—	—	◆	—	—	—	—	4-7
	M-switch Assy	A-7040-159-A	—	—	—	—	—	◆	—	—	—	—	4-21
	Reel motor	8-835-304-11	—	—	—	—	—	◆	—	—	—	—	4-8
	T Reel Table Ass'y	X-3711-998-1	—	—	—	—	—	◆	—	—	—	—	4-14
	S Reel Table Ass'y	X-3713-427-1	—	—	—	—	—	◆	—	—	—	—	4-13
	T·Main Brake Ass'y	X-3686-574-1	—	—	—	◆	—	—	—	◆	—	—	—
	S·Main Brake Ass'y	X-3711-991-1	—	—	—	◆	—	—	—	◆	—	—	—
	T·Soft Brake Ass'y	X-3711-987-2	—	—	—	◆	—	—	—	◆	—	—	—
	REW Brake Ass'y	X-3711-993-1	—	—	—	◆	—	—	—	◆	—	—	—
	Tension Regulator Band Ass'y	X-3686-531-1	—	—	—	◆	—	—	—	◆	—	—	4-17
	Roller (Cassette-up Compartment)	3-713-466-01	○	○	○	○	○	○	○	○	○	○	—
Performance Check	Abnormal-noise	—	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	—
	FWD Back tension measurement	—	—	◇	—	◇	—	◇	—	◇	—	◇	5-5
	Brake torque measurement	—	—	◇	—	◇	—	◇	—	◇	—	◇	5-1, 5-2, 5-3
	FWD, RVS torque measurement	—	—	◇	—	◇	—	◇	—	◇	—	◇	5-4

Note 1 : When overhauling the unit, refer to the items above for replacement of parts.

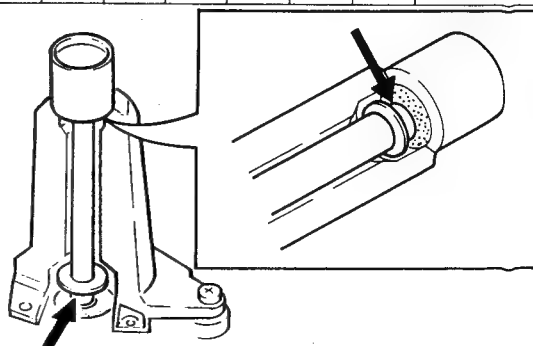
Note 2 : The time of parts replacement will differ with operating environment

Note 3 : Be sure to clean the tape path surface in repairing.

Note 4 : Oiling to the Capstan Shaft Bearing.

Apply one-half drop of oil to the Capstan Shaft Bearing after removing the Chapstan Motor.

(Never apply oil to the tape path surface.)



3-4. HOW TO USE THE CLEANING TAPE

Cleaning Tape: V8-6CLHSP (supplied accessory)
V8-25CLH (option)

. Never use the cleaning tape, V8-25CLN.

- (1) When the rotary heads clog and head cleaning described Section 3-1 can not clean the heads, use the cleaning tape.

If use the cleaning tape except for the above, it will shorten the life of the heads.

- (2) The one time cleaning is within fifteen seconds and use the cleaning tape only one time after rewinding.

3-5. OTHERS

(1) Sony oil

- . Be sure to use the Sony oil as the lubrication oil. (If other oil is used, various troubles due to different viscosity tends to be caused.)

Sony oil: Part No. 7-661-018-18

- . Use the Sony oil in which dust or other foreign material have not mixed for lubricating the bearing. (If foreign material is in the oil, wear or burning of the bearing tends to be caused.)

- . One drop of oil means the amount which sticks to a 2 mm diameter rod, as shown in the figure.

(2) Sony grease

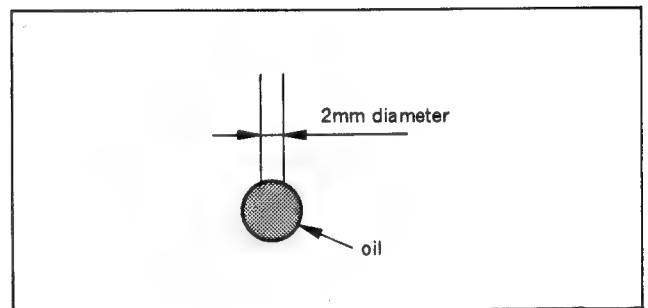
- . Be sure to use the Sony grease as the lubrication grease.

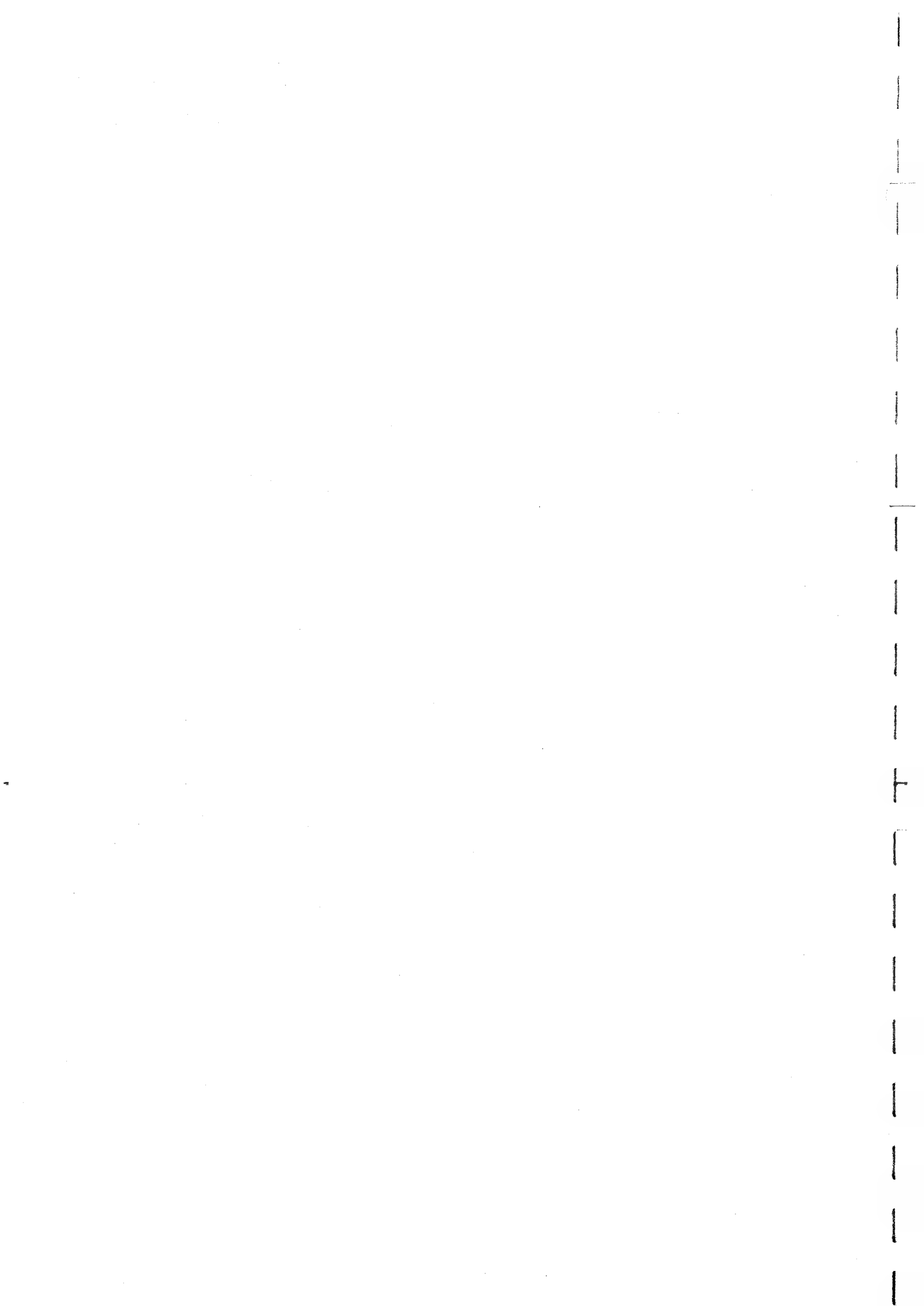
Sony grease: Part No. 7-662-001-62
(SGL-501)

(3) MOLYTONE GREASE

- . Be sure to use the MOLYTONE GREASE as the lubrication grease.

MOLYTONE GREASE: Part No. 7-662-001-41
(No. 320)





SECTION 4

REPLACEMENT OF MAJOR PARTS

PREPARATION FOR REPLACEMENT OF PARTS

Replacement of some parts use the *Mode Selector. The mode (☐ marked mode) in the replacement procedure is set by pressing the button on the Mode Selector.

*It is a kind of tool.

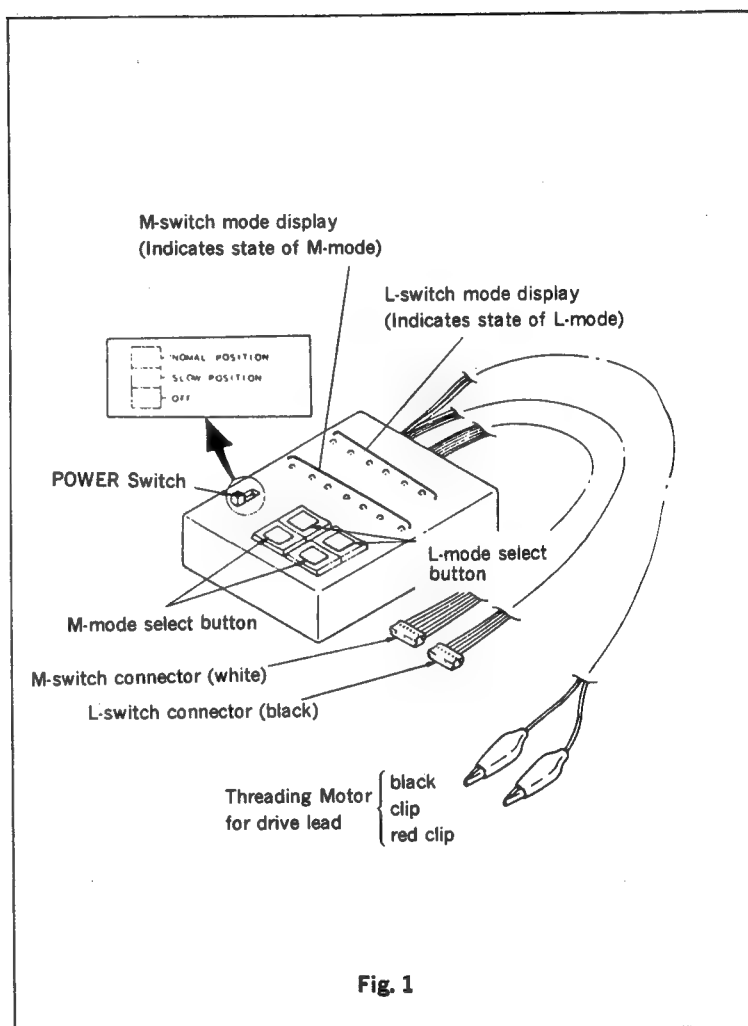
Part No. : J-6080-825-A

. Operation of Mode selector

1. Location of parts and controls (fig. 1)

2. Connection (fig. 2)

- (1) Remove the Front Panel, Bottom Plate and Top Panel referring to Section 2-1.
- (2) Remove the Mecha Deck Block from the unit referring to Section 2-2.
- (3) Remove the MB-19, MD-23(P), HK-5 and SE-10(P) Boards from the unit referring to Sections 2-5-5, 2-5-6 and 2-5-7.
- (4) Disconnect the connectors (6P) on the MS-4 and LS-9 Boards.
- (5) Connect the 6P connector (six harness, white) for the M-switch of the Mode Selector to the MS-4 Board.
- (6) Connect the 6P connector (four harness, black) for the L-switch of the Mode Selector to the LS-9 Board.
- (7) Remove the cover of the Threading Motor.
- (8) Connect the red clip of the Threading Motor driver lead to the red terminal of the Threading Motor and the black clip to the brown terminal.



3. Note

- (1) When operating L-switch, be sure to set the mode of M-switch to LOADING/ UNLOADING mode.
- (2) When operating M-switch, be sure to set the mode of L-switch to LOADING TOP or LOADING END mode.

4. Operation

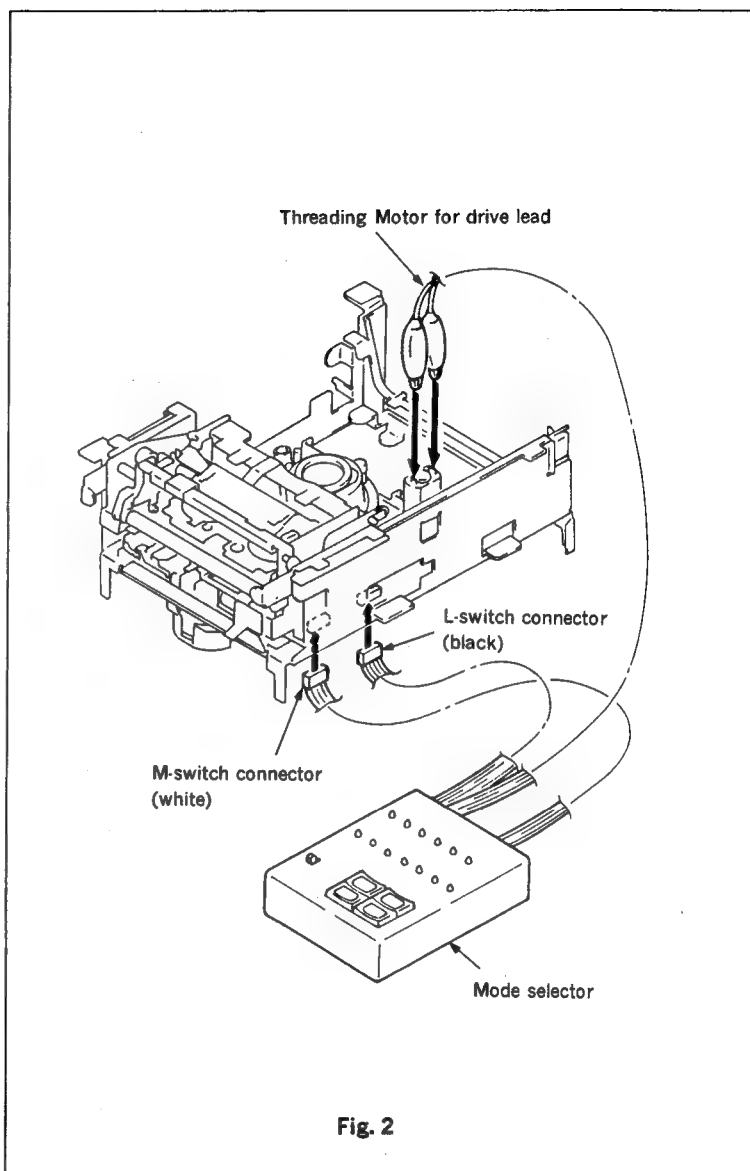
When L-mode or M-mode does not set in each mode during mode selection, the BLANK position lights up.

(1) L-mode

- . When the right side L-mode select button is pressed continuously, the mode changes from LOADING TOP to LOADING END in order from left.
- . When the mode changes from LOADING END to LOADING TOP in order, press the left side L-mode select button continuously.
- . When the power switch is set to the SLOW position, the L-mode operates more slowly than the NORMAL position.

(2) M-mode

- . When performing EJECT, set the mode of L-switch to LOADING TOP.
- . When performing from FF/REW to RVS or from RVS to FF/REW, set the mode of L-switch to LOADING END.
- . When the right side M-mode select button is pressed continuously, the mode changes from EJECT to RVS in order from left.
- . When the mode changes from RVS to EJECT, press the left side M-mode select button continuously.



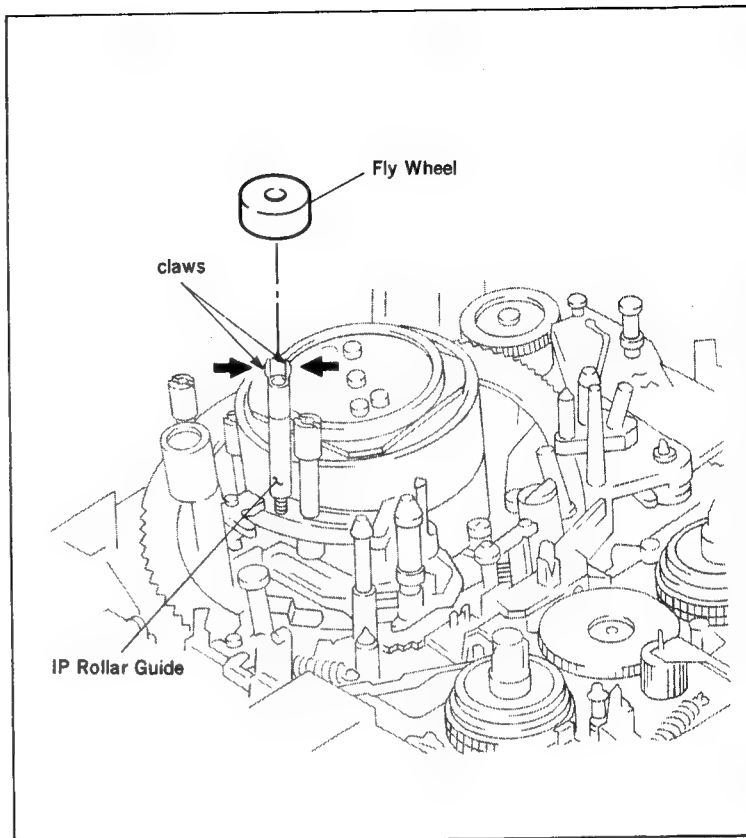
4-1. REPLACEMENT OF THE FLY WHEEL

Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Remove the Fly Wheel while picking the claws.

Installation:

- (1) Replace the Fly Wheel with a new one. Insert the Fly Wheel in the IP Rollar Guide from the big hole side until click sound can be heard.



4-2. REPLACEMENT OF THE ROTARY UPPER DRUM

- . The video heads can not be replaced as a single part. Replace the whole Rotary Upper Drum Assembly.
- . There is a relay PC Board (DH-13 Board) for the video and audio signals in the Rotary Upper Drum. It is not necessary to replace the DH-13 Board, if it is broken, replace the whole the Rotary Upper Drum Assembly.

Tools: Rotary Drum Tool (Ref No. J-11)
(It is packed together with the
Repair Rotary Upper Drum.)
L-shaped wrench
(across flat has 1.5 mm)

Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Remove the Fly Wheel referring to Section 4-1.
- (3) Remove the two screws (M2 X 2.7) and remove the Dynamic Damper.
- (4) Unsolder the ten terminals at A positions. Check that the terminals which are projected out from the PC Board move freely with a pair of tweezers, etc. (fig. 1)
- (5) Remove the two screws (M2 X 5).
- (6) Install the tool A to the two screw holes of installing the Dynamic Damper with the two accessory supplied screws. Thread the accessory supplied hexagon screw into the center hole of the tool A, and remove the Rotary Upper Drum. (fig. 2)

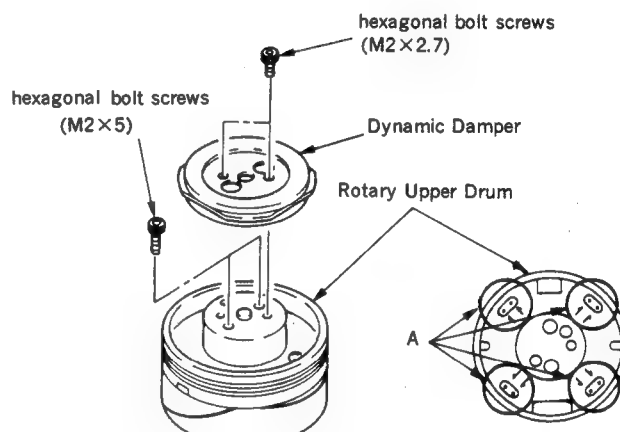


Fig. 1

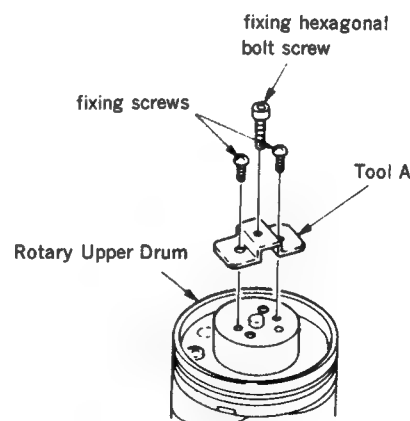


Fig. 2

Installation:

- (1) Clean the flange surface of the Lower Drum and the contact point of the new Rotary Upper Drum with a cleaning piece. Check that no dust or flaw are left.
- (2) While adjusting the positional relationship of the Rotary Upper Drum and positioning hole with the tool B, insert the Rotary Upper Drum lightly. At this time, Check that the terminals project out from the PC Board of the Rotary Upper Drum. When the terminals are caught, correct them with a pair of tweezers, etc.. Remove the tool B and lightly push the Rotary Upper Drum by hand. If the Rotary Upper Drum does not down to the bottom, thread the two fixing screws to the Rotary Upper Drum alternately, but do not tighten them. Insert the tool B in the positioning hole and check that the tool B can be inserted smoothly again. If the tool B can not be inserted, loosen the two screws (M 2 x 5) and adjust the position of the Rotary Upper Drum by precision screwdriver. (fig. 3 and 4)
- (3) Tighten the two hexagon screws (M2 X 5).
- (4) Assemble the parts with Removal Steps (1) to (4) in reverse order.

Note: . Do not tighten all the screws too strongly.

. Be carefull not to flow solder below the PC Board.

Note: After replacement, perform the Tape Path Adjustment referring to Section 6.

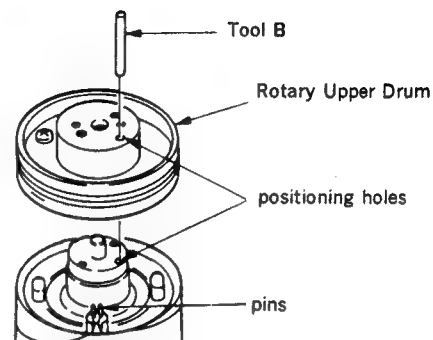


Fig. 3

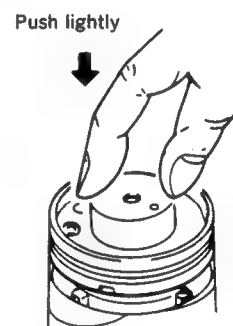


Fig. 4

4-3. REPLACEMENT OF THE DRUM ASSEMBLY

Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (3) Remove the Fly Wheel referring to Section 4-1.
- (4) Open the HK-5 and SE-10(P) Boards referring to Section 2-5-6 and 2-5-7.
- (5) Remove the two fixing screws and remove the Flexible Cover. (fig. 1)
- (6) Disconnect the connectors (CN805, 806) on the MD-23(P) Board and disconnect the connector (CN001) on the FR-43 Board.
- (7) Remove the fixing screw and remove the Shaft Ground Terminal.
- (8) Remove the two fixing screws and remove the Drum Assembly. (fig. 2)

Note: At this time, be careful that the Drum Assembly does not touch the No. 3 Guide and the IP Roller Guide, etc..

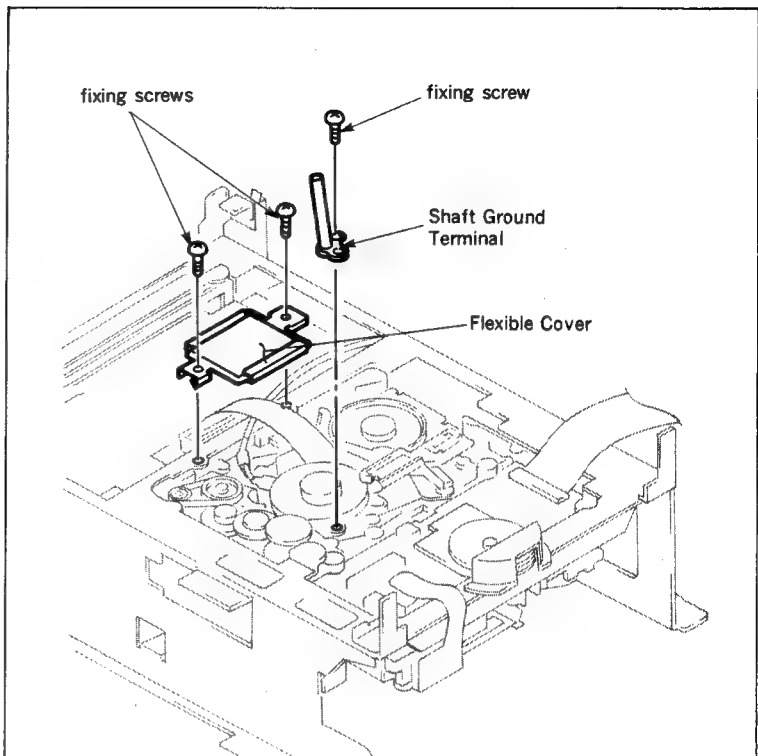


Fig. 1

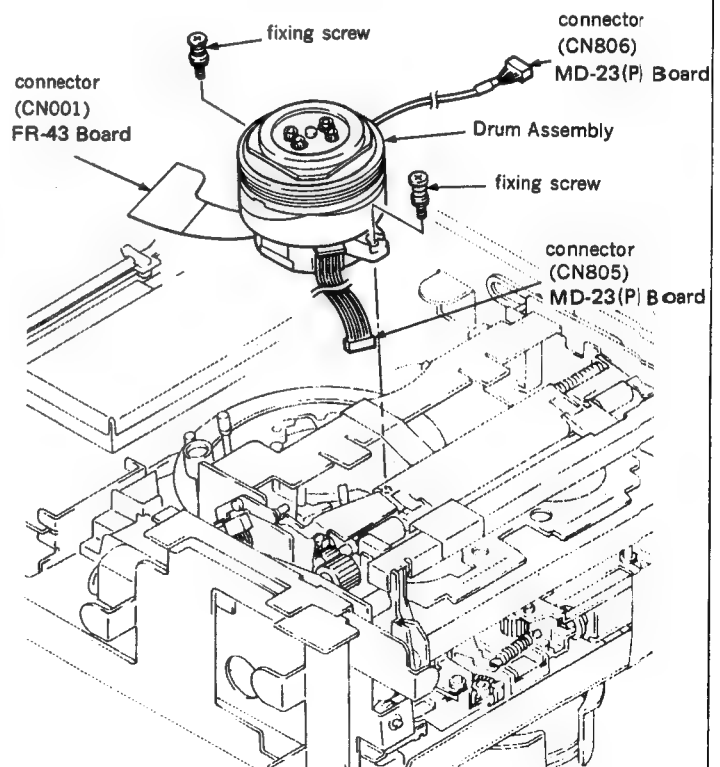


Fig. 2

Installation:

- (1) Clean the flange surface of the new Drum Assembly and the contact point of the mechanical chassis with a cleaning piece.
- (2) Set the Drum Assembly to the two projections of the Mecha chassis and tighten the two fixing screws.

Note: At this time, be careful that the screwdriver does not touch the head chips. (fig. 3)

- (3) Peel off the tape from the Rotor and FG Stator of the Drum Assembly.
- (4) Clean the shaft of the Drum Assembly with a cleaning piece.
- (5) Clean the Shaft Ground Terminal which contact to the Drum Shaft with a cleaning piece and set the Shaft Ground Terminal to the projection of mechanical chassis and tighten the fixing screw.
- (6) Assemble the parts with Removal Steps (1) to (6) in reverse order.

Note: After replacement, perform the Tape Path Adjustment referring to Section 6.

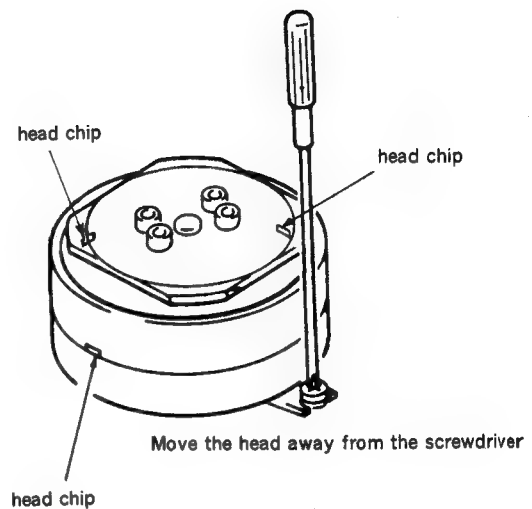


Fig. 3

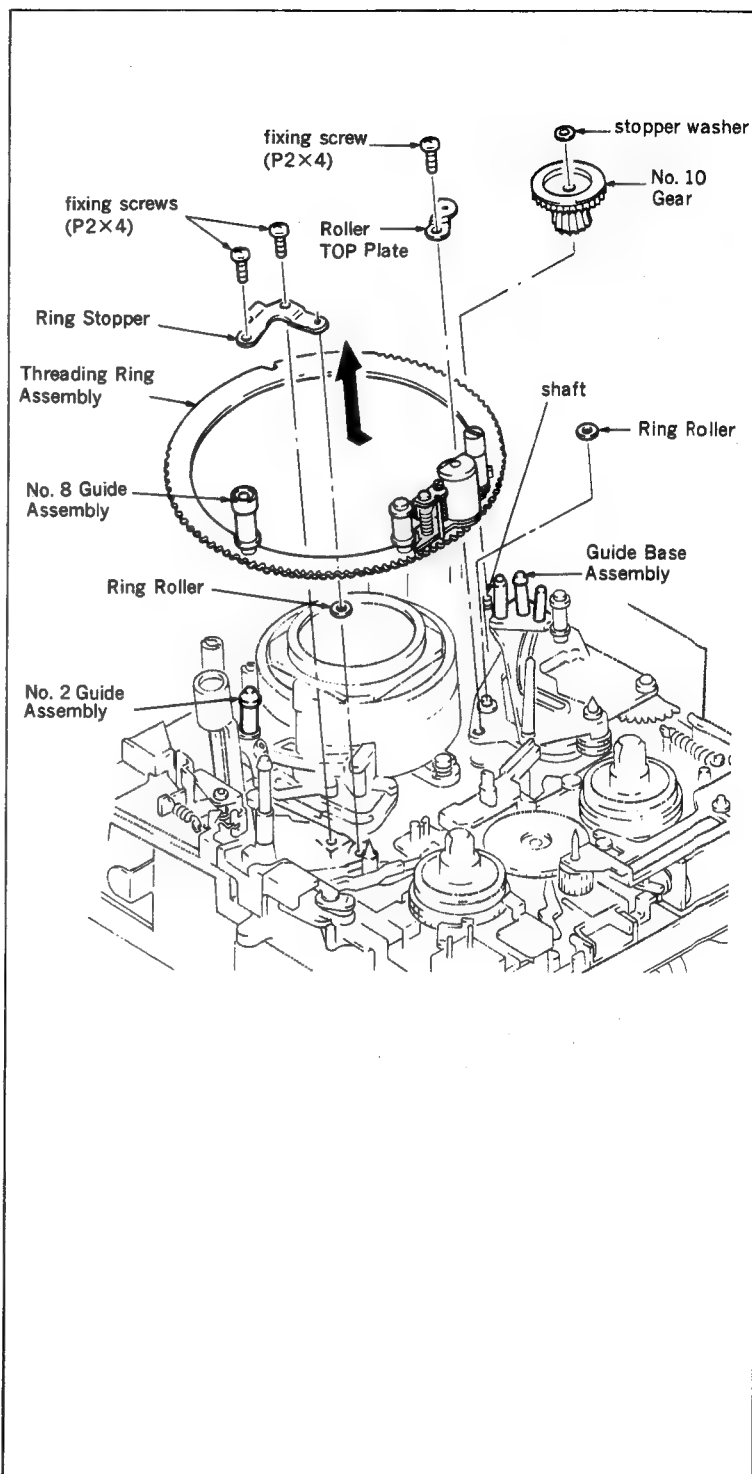
4-4. REPLACEMENT OF THE THREADING RING ASSEMBLY

Tools: Mode Selector (Ref. No. J-13)
No. 10 Gear Phase Tool
(Ref. No. J-9)
Sony Oil

Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Press the L-mode select button of the Mode Selector and move the Guide Base Assembly and the No. 2 Guide Assembly until just before it is locked. (Do not move the Threading Ring Assembly.)
- (3) Remove the stopper washer and remove the No. 10 Gear Assembly.
- (4) Remove the fixing screw and remove the Roller Top Plate and Ring Roller.
- (5) Remove the two fixing screws and remove the Ring Stopper and Ring Roller.
- (6) Remove the Threading Ring Assembly in the direction of the arrow.

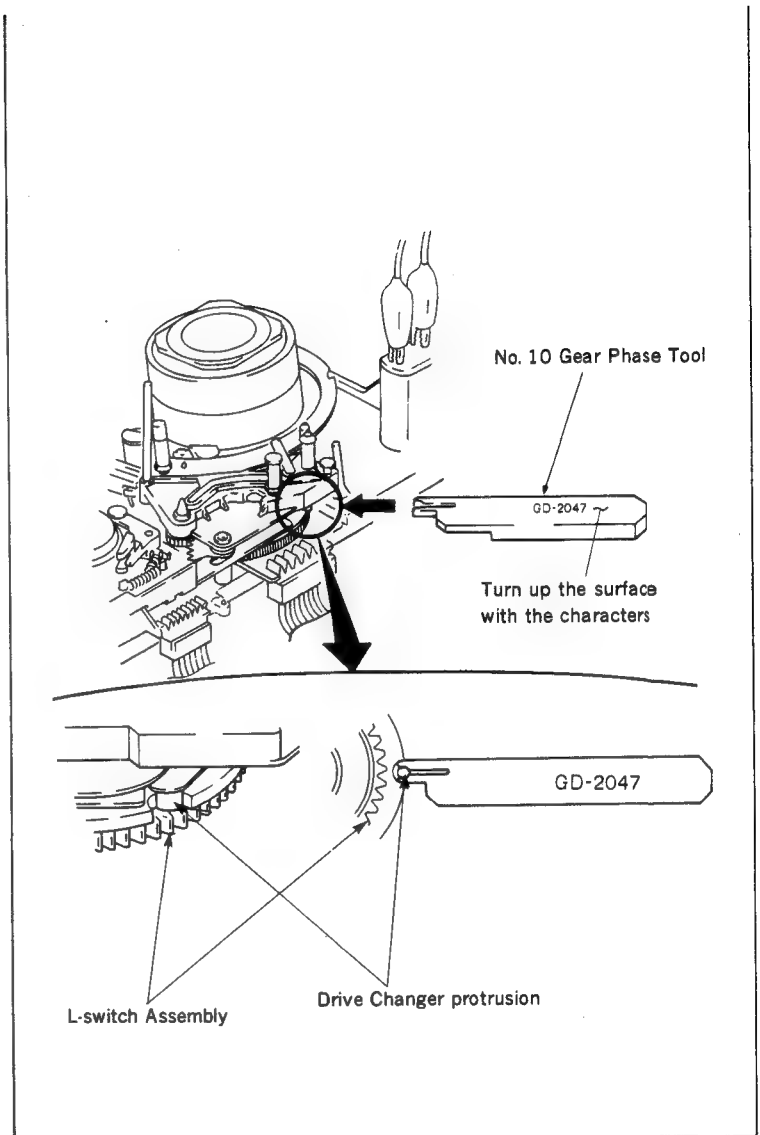
Note: When removing the Threading Ring Assembly, be careful that the Threading Ring Assembly does not touch the Drum and Capstan Shaft.



Installation:

- (1) Replace the Threading Ring Assembly with a new one.
- (2) Install the Threading Ring Assembly so that it puts into the unthreading mode. The Pinch Roller Arm Assembly is the Reel Table side. (Check that each assembly is put into the Step (2) at removal procedure.)
- (3) Install the Ring Roller and Ring Stopper and tighten them with two fixing screws. (Check that the No. 8 Guide Assembly is in front of Ring Stopper.)
- (4) Install the Ring Roller and Roller Top Plate and tighten them with the screw. (Check that the Threading Ring Assembly matches the three Ring Rollers.)
- (5) Apply a half drop of oil on the shaft.
- (6) Check that the pin of the Drive Changer Assembly is into the notch of the L-switch Assembly. Insert the No. 10 Gear Phase Tool (Ref. No. J-9) into the notch of the L-SW Assembly.
- (7) While pushing the No. 8 Guide Assembly against the Ring Stopper, install the No.10 Gear Assembly with a stopper washer.
- (8) Pull out the No. 10 Gear Phase Tool.
- (9) Press the L-mode select button of the Mode Selector and set to the LOADING TOP mode.
- (10) Install the Cassette-up Compartment Assembly referring to Section 2-3.

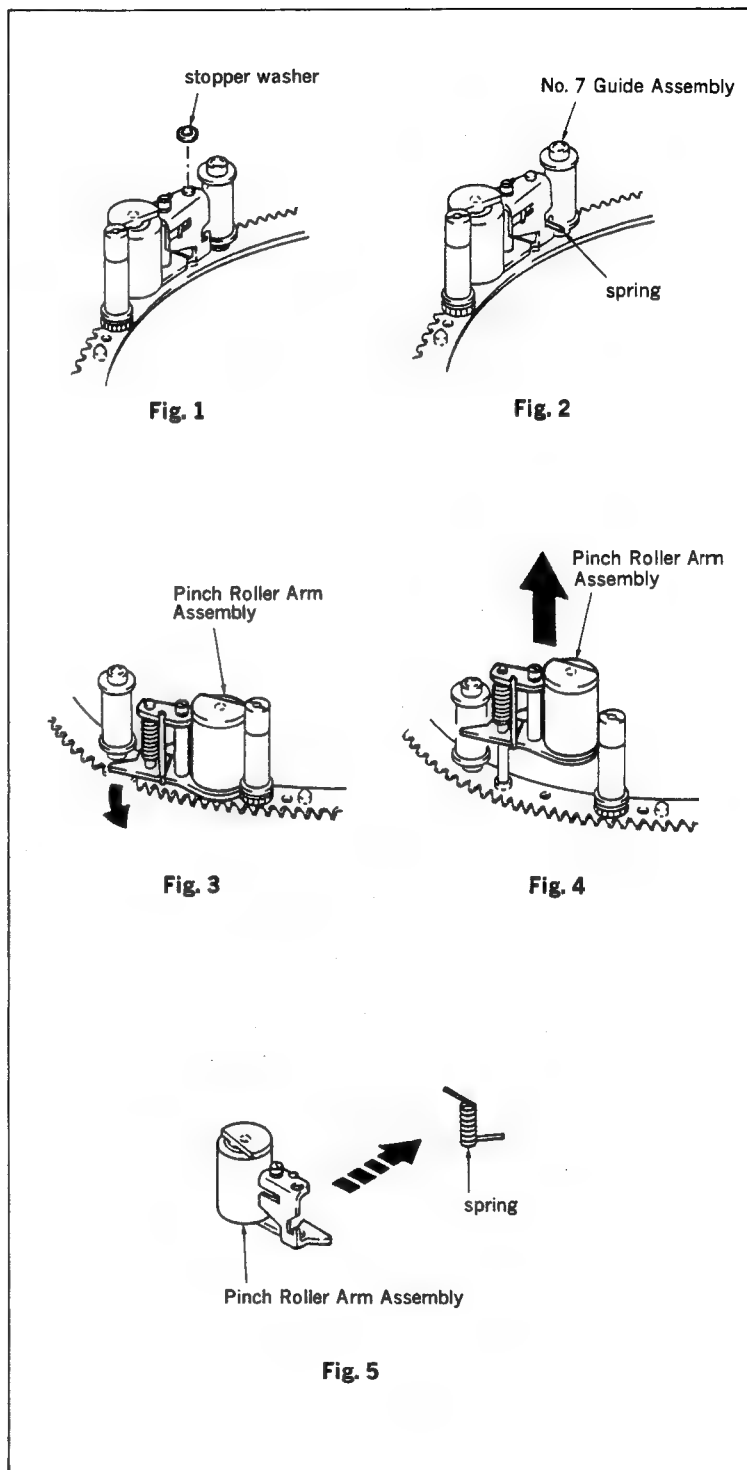
Note: After replacement, perform the Tape Path Adjustment referring to Section 6.



4-5. REPLACEMENT OF THE PINCH ROLLER ARM ASSEMBLY

Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (3) Remove the stopper washer. (fig. 1)
- (4) Hook the spring which is hooked to the No. 7 Guide Assembly to the groove of the Pinch Roller Arm (fig. 2)
- (5) Turn the Pinch Roller Arm Assembly in the direction of the arrow. (fig. 3)
- (6) Remove the Pinch Roller Arm Assembly in the direction of the arrow. (fig. 4)
- (7) Remove the spring. (fig. 5)



Installation:

- (1) Replace the Pinch Roller Arm Assembly with a new one.
- (2) Install the spring and hook the ends of the spring to the Pinch Roller Arm Assembly. (fig. 1)
- (3) Insert the end of the clip or another thin rod into the hole of the Pinch Roller Arm Assembly. (fig. 2 and 3)
- (4) Put the end of the clip to the shaft of the Threading Ring Assembly and install the Pinch Roller Assembly. (fig. 4 and 5)
- (5) Hook the end of the spring to the No. 7 Guide Assembly.
- At this time, check that the another end of the spring is hooked to "A". (fig. 6)
- (6) Assemble the parts with Removal Steps (1) to (3) in reverse order.

Note: After replacement, perform the Tape Path Check referring to Section 6-6.

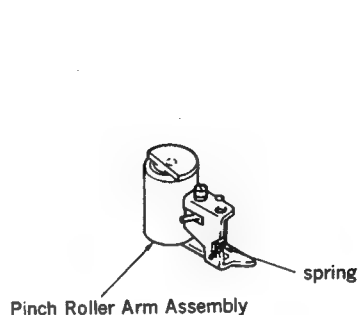


Fig. 1

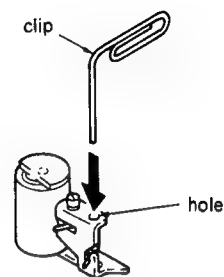


Fig. 2



Fig. 3

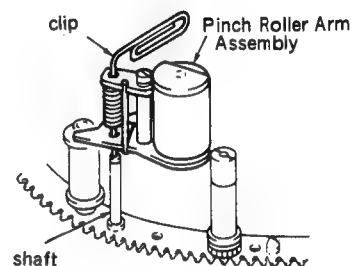


Fig. 4

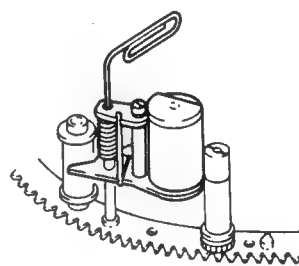


Fig. 5

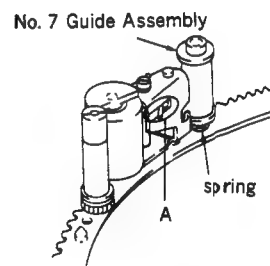


Fig. 6

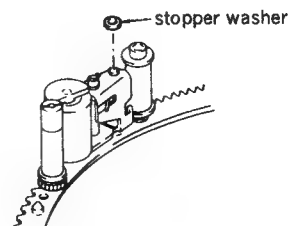


Fig. 7

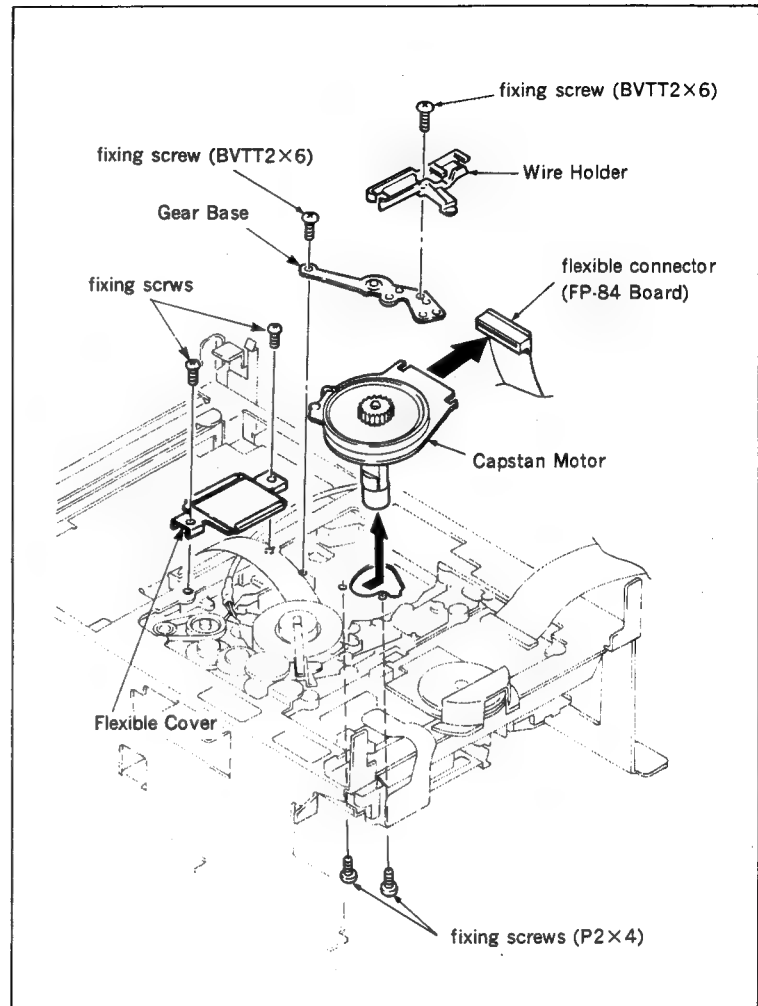
4-6. REPLACEMENT OF THE CAPSTAN MOTOR

Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (3) Remove the Threading Ring Assembly referring to Section 4-4.
- (4) Open the HK-5 and SE-10(P) Boards referring to Sections 2-5-6 and 2-5-7.
- (5) Remove the two fixing screws and remove the Flexible Cover.
- (6) Remove the harness of the Capstan Motor from the Wire Holder.
- (7) Remove the fixing screw and remove the Wire Holder.
- (8) Remove the fixing screw and remove the Gear Base.
- (9) Disconnect the flexible connector of the Capstan Motor.
- (10) Remove the two fixing screws and remove the Capstan Motor in the direction of the arrow.

Installation:

- (1) Replace the Capstan Motor with a new one and assemble the parts with Removal Steps (1) to (10) in reverse order.



4-7. REPLACEMENT OF THE THREADING MOTOR ASSEMBLY

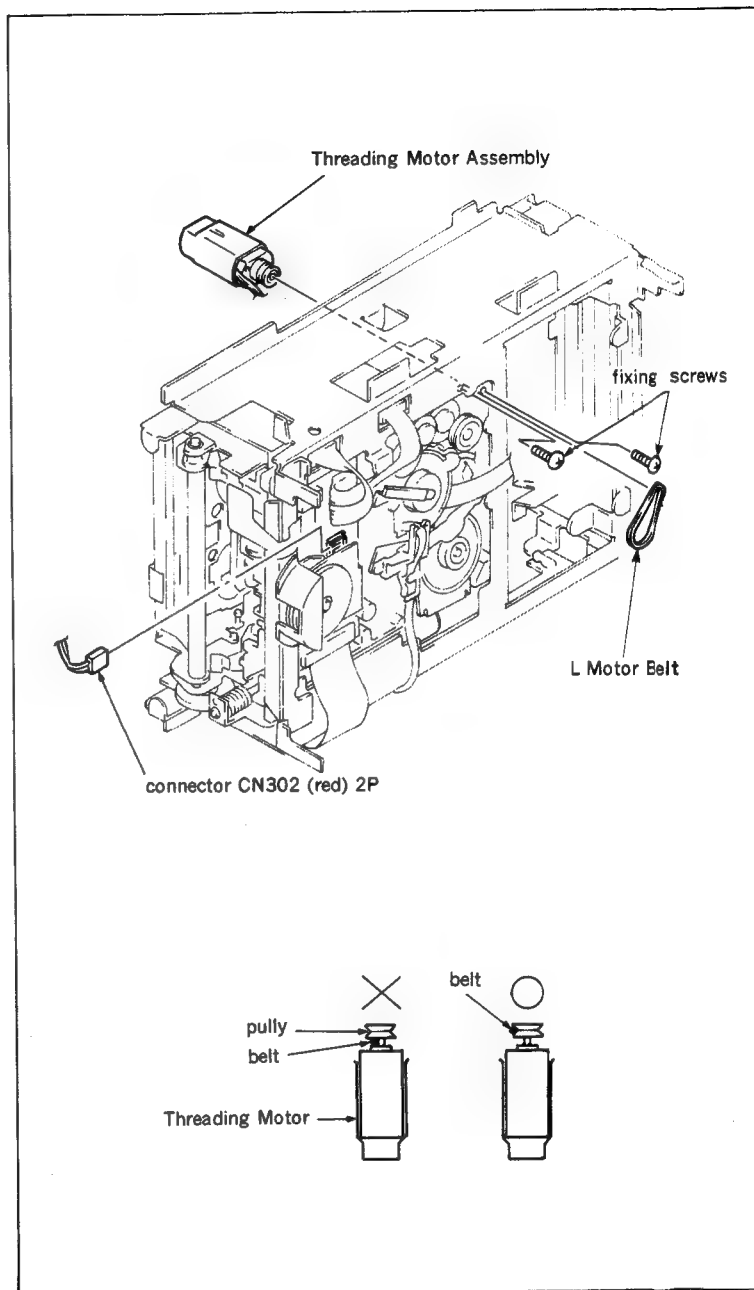
Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Open the HK-5 and SE-10(P) Boards referring to Section 2-5-6 and 2-5-7.
- (3) Remove the L Motor Belt.
- (4) Disconnect the connector (CN302) on the RS-31 Board.
- (5) Remove the two fixing screws and remove the Threading Motor Assembly.

Installation:

- (1) Replace the Threading Motor Assembly with a new one and assemble the parts with Removal Steps (1) to (5) in reverse order.

Note: Before installing the L Motor Belt, clean it with a cleaning piece and be sure to install the belt in the groove of pulley.



4-8. REPLACEMENT OF THE REEL MOTOR

Removal:

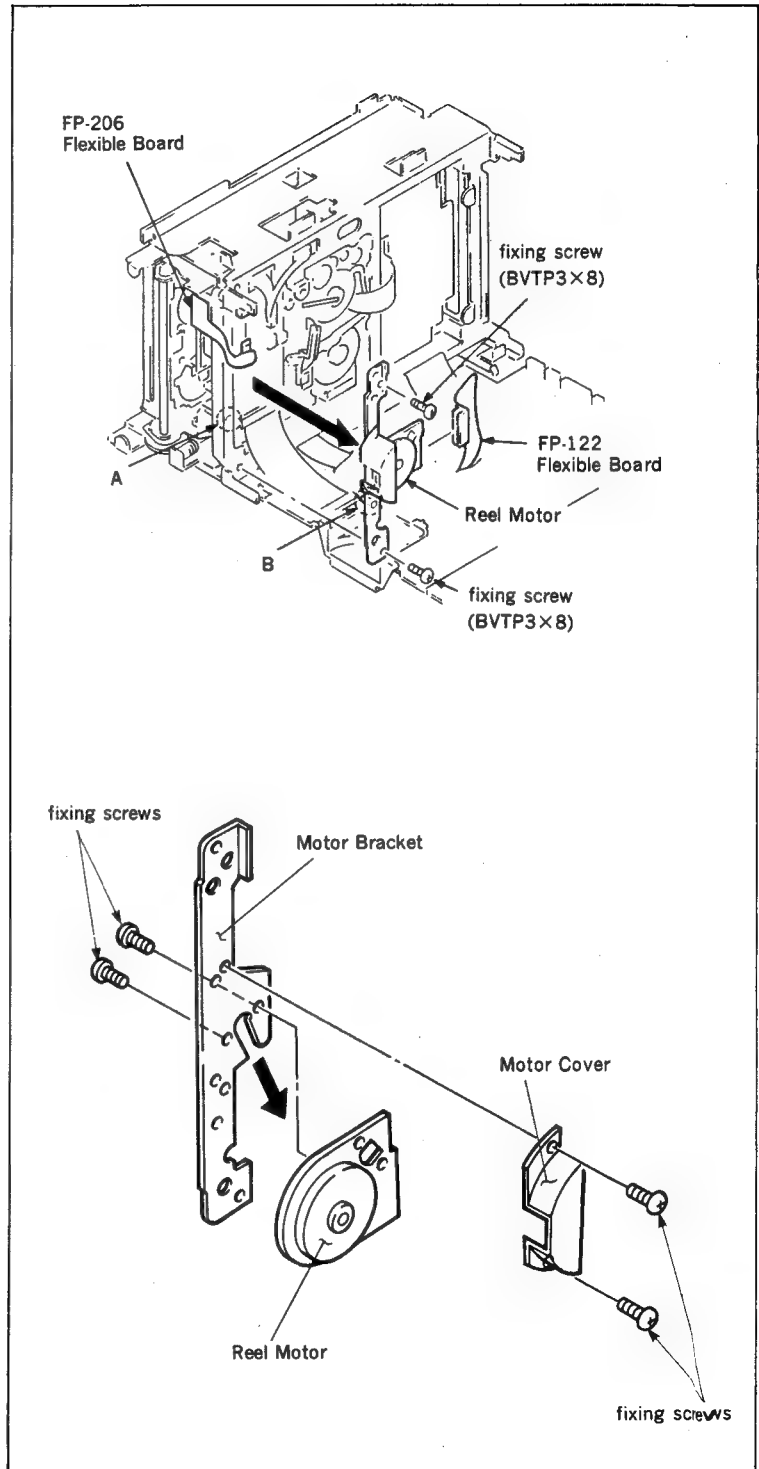
- (1) Open the HK-5 and SE-10(P) Boards referring to Section 2-5-6 and 2-5-7.
- (2) Remove the FP-122 Flexible Board from the PC Board of the Reel Motor.
- (3) Remove the FP-206 Flexible Board from the RS-31 Board.
- (4) Remove the two fixing screws of the Motor Bracket.
- (5) Insert a flatblade screwdriver into A, release the projection B and remove the Motor Bracket.

Note: If the Motor Bracket is removed by hand directly, it tends to damage the Motor Bracket.

- (6) Remove the two fixing screws and remove the Motor Cover from the Motor Bracket.
- (7) Remove the two fixing screws and remove the Reel Motor in the direction of the arrow.

Installation:

- (1) Replace the Reel Motor with a new one. Assemble the parts with Removal Steps (1) to (7) in reverse order.



4-9. REPLACEMENT OF THE No. 3 AND No. 4 GUIDES

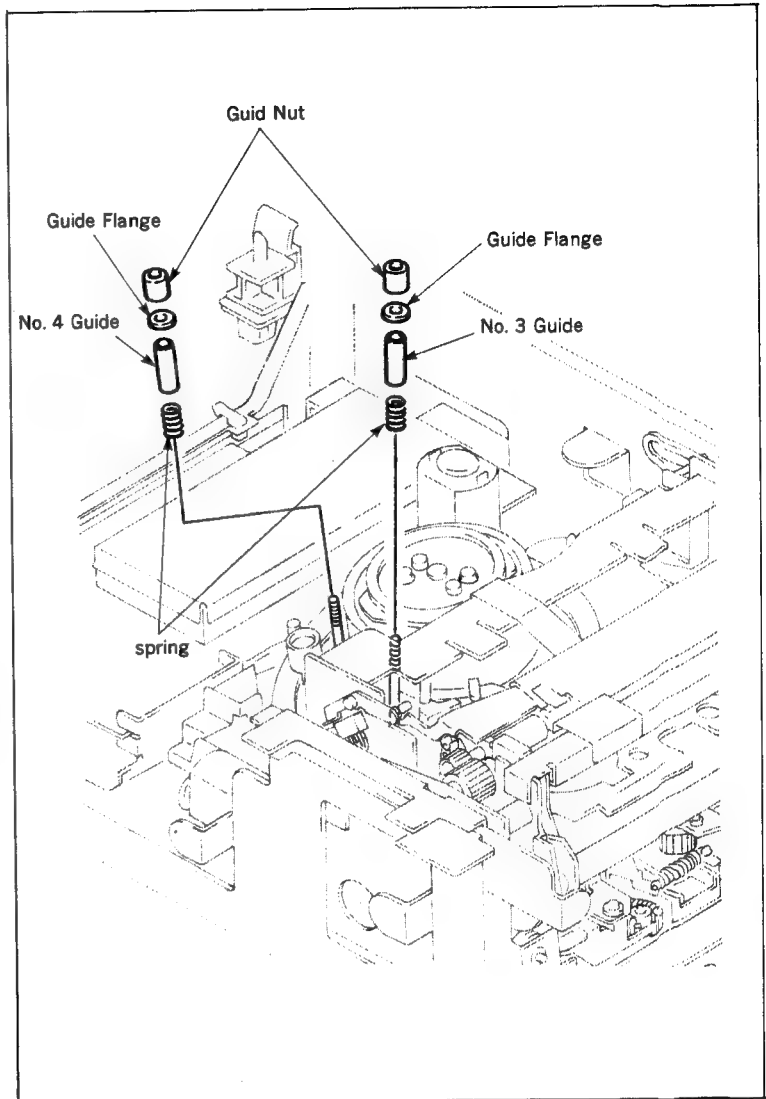
Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) When replacing the No. 3 Guide, remove the Fly Wheel referring to Section 4-1.
- (3) Turn the Rotary Upper Drum counterclockwise and keep heads away from the No. 3 Guide or No. 4 Guide.
- (4) Remove the Guide Nut and remove the Guide Flange, No. 3 Guide (or No. 4 Guide) and spring.

Installation:

- (1) Replace the No. 3 Guide (or No. 4 Guide) with a new one.
- (2) Assemble the parts with Removal Steps (1) to (4) in reverse order.

Note: After replacement, adjust the height of the No. 3 and No. 4 Guides to meet the tape path condition of Section 6-6-3 by turning the Guide Nut.



4-10. REPLACEMENT OF THE ENTRANCE GUIDE (P) ASSEMBLY (No. 2 GUIDE ASSEMBLY)

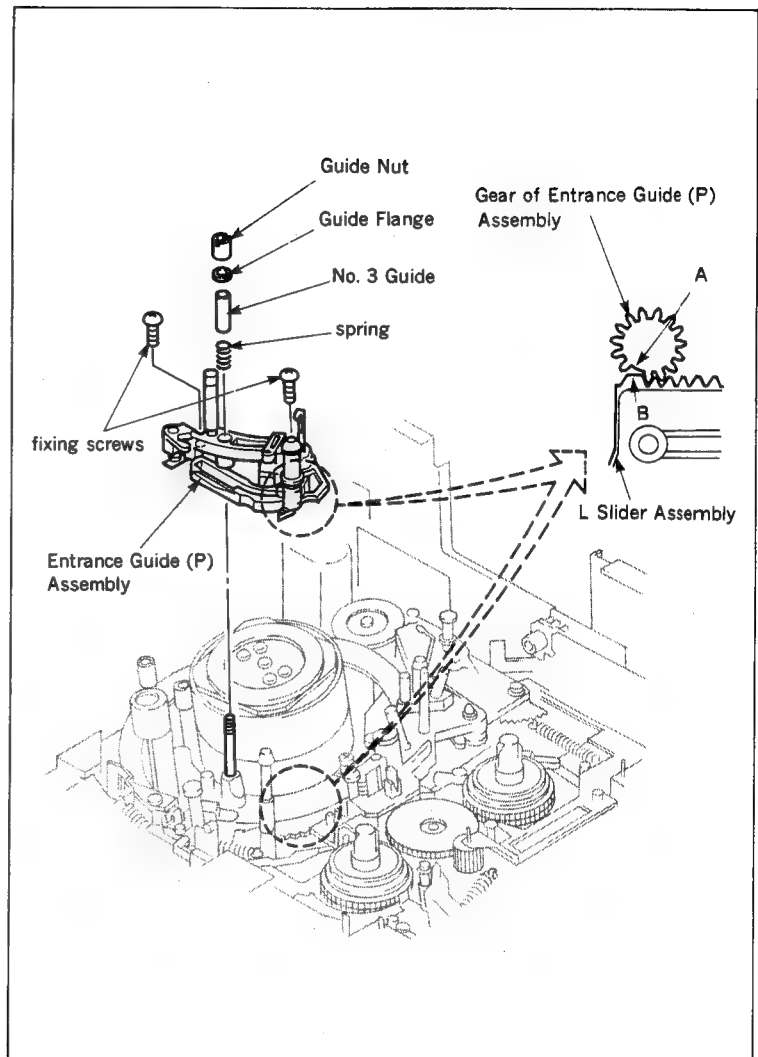
Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (3) Remove the Fly Wheel referring to Section 4-1.
- (4) Turn the Rotary Upper Drum counterclockwise and keep heads away from the Entrance Guide (P) Assembly.
- (5) Remove the Guide Nut and remove the Guide Flange, No. 3 Guide and spring.
- (6) Remove the two fixing screws and remove the Entrance Guide (P) Assembly.

Installation:

- (1) Check that the mechanical block is put into the **LOADING TOP** mode.
- (2) Replace the Entrance Guide (P) Assembly with a new one.
- (3) Engage the Entrance Guide (P) Assembly and L Slider Assembly so that their flat portions A and B are matched, and tighten it with two fixing screws.
- (4) Assemble the parts with Removal Steps (3) and (5) in reverse order.
- (5) Perform the FWD running more than two minutes and then perform the FWD Back Tension Adjustment referring to Section 5-5.
- (6) Assemble the parts with Removal Steps (1) and (2) in reverse order.

Note: After replacement, perform the Tape Path Adjustment referring to Section 6.



4-11. REPLACEMENT OF THE SLANT GUIDE ASSEMBLY

Tool: Mode Selector (Ref. No. J-13)

Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Remove the Threading Ring Assembly referring to Section 4-4.
- (3) Remove the fixing screw and E ring.
- (4) Remove the Slant Guide Block Assembly.

Installation:

- (1) Operate the L-mode select button of the Mode Selector and align the right edge of the L Slider Assembly and the right side of the Lock Slider M Assembly. (fig. 2)

Note: At this time, check that the position of the notch on the Slant Guide Drive Gear is placed as shown in figure 2.

- (2) Assemble the Guide Base Assembly of new Slant Guide Block Assembly the position of the *unthreading end.
*The Guide Base Assembly is the Reel Table side.
- (3) Assemble the parts with Removal Steps (1) to (3) in reverse order.

Note: After replacement, perform the Tape Path Check referring to Section 6-6.

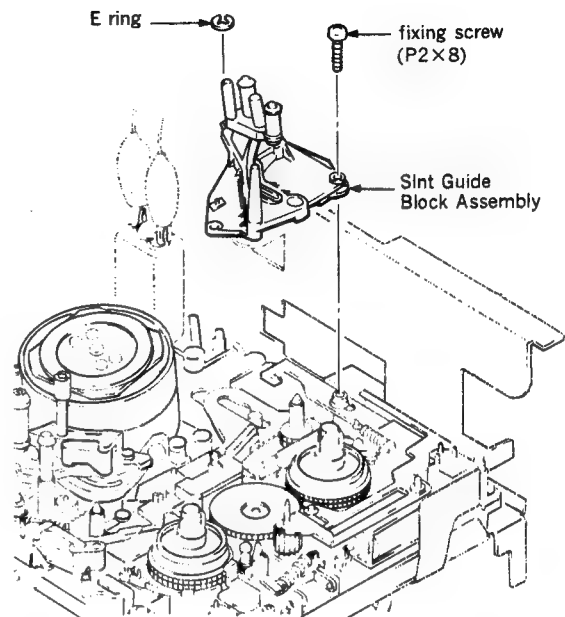


Fig. 1

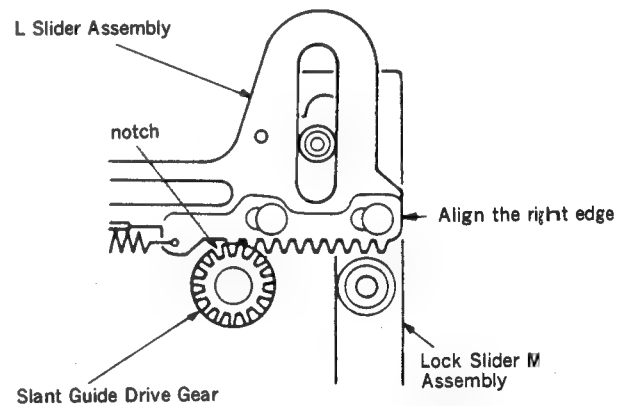


Fig. 2

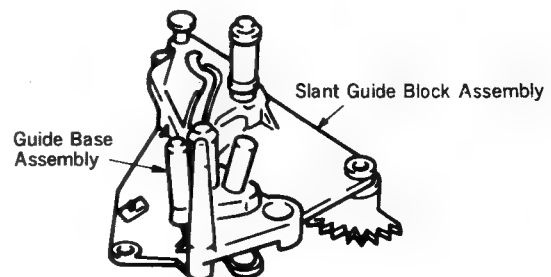


Fig. 3

4-12. REPLACEMENT OF THE No. 5 GUIDE BLOCK COMPLETE ASSEMBLY

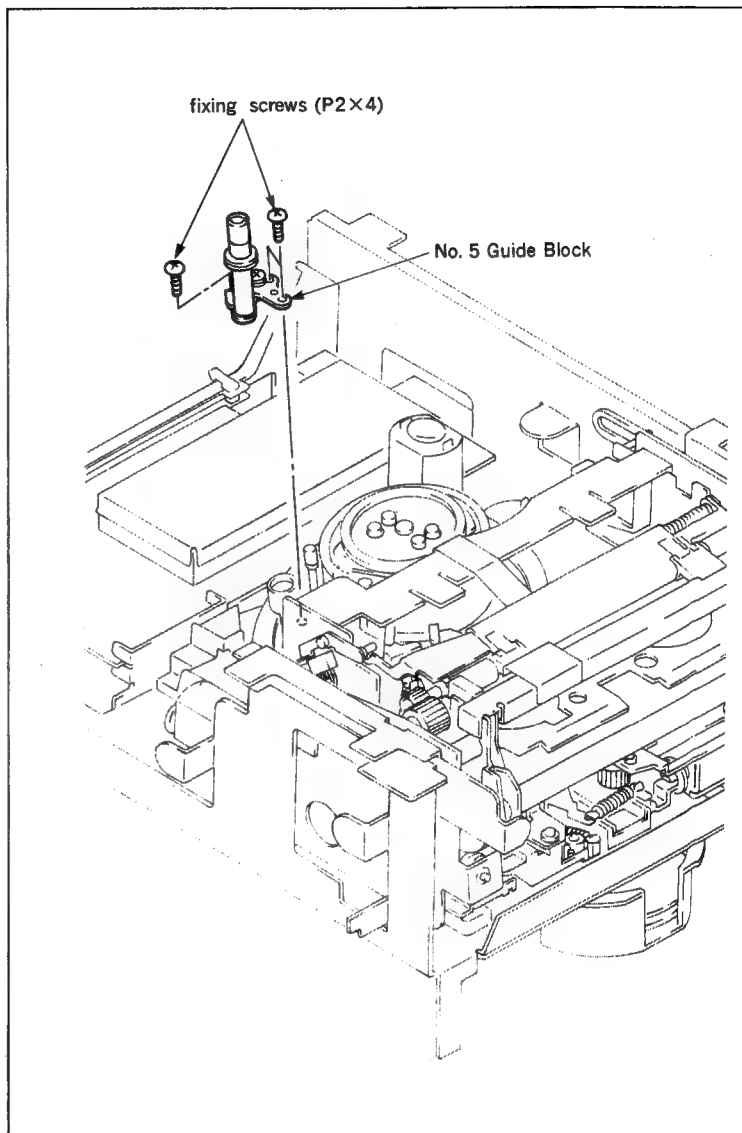
Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Turn the Rotary Upper Drum counterclockwise and keep heads away from the fixing screw of the Guide Block.
- (3) Remove the three fixing screws and remove the No. 5 Guide Block Complete Assembly.

Installation:

- (1) Replace the No. 5 Guide Block Complete Assembly with a new one.
- (2) Assemble the parts with Removal Steps (1) and (3) in reverse order.

Note: After replacement, perform the Tape Path Adjustment referring to Section 6.



4-13. REPLACEMENT OF THE S REEL TABLE ASSEMBLY

Tools: Mode Selector (Ref. No. J-14)
Cassette Tape
Dial Tension Gauge (Ref. No. J-6)
Tension Measurement Reel (30 mm dia.)
(Ref. No. J-7)
Sony Oil

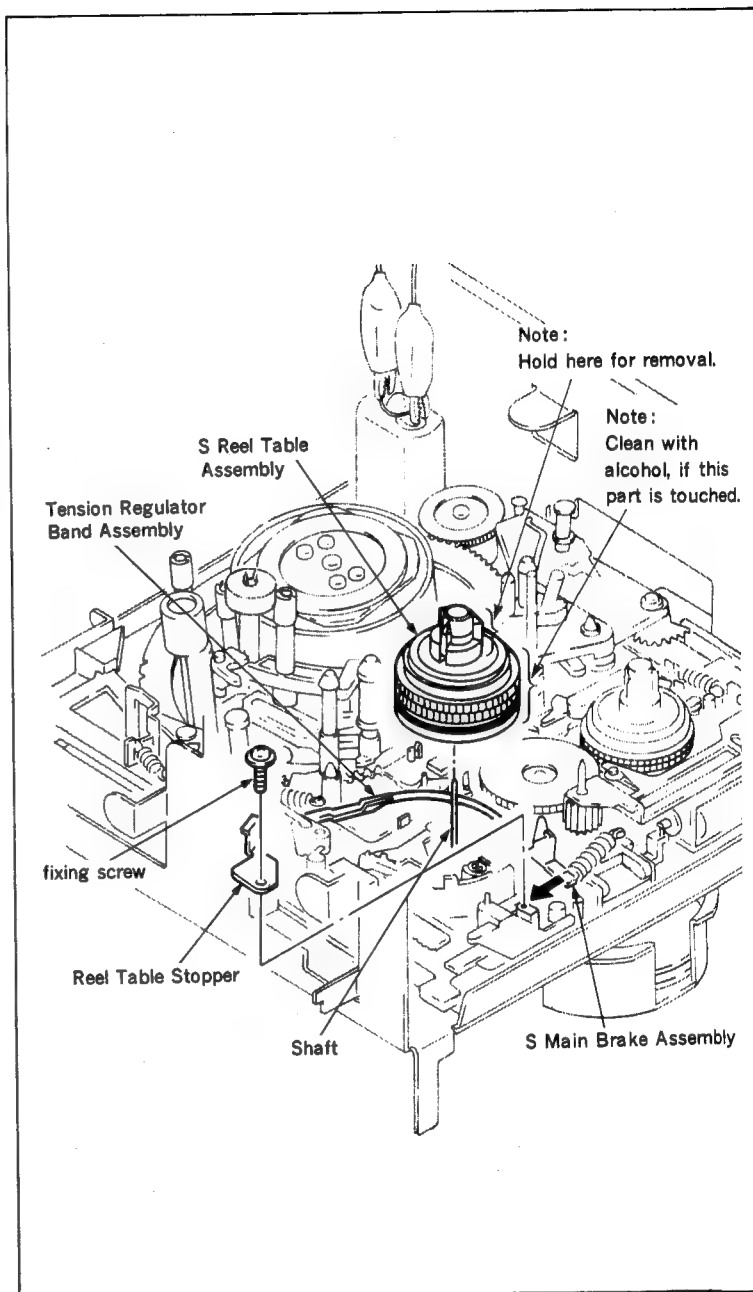
Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Press the M-mode select button of the Mode Selector and set to the **FF/REW** mode.
- (3) Remove the fixing screw and remove the Reel Table Stopper.
- (4) Remove the S Reel Table Assembly.

Note: Be sure to hold the upper reel claw when removing the S Reel Table. (Note of figure)

Installation:

- (1) Apply a half drop of oil on the top point of the Reel Shaft.
- (2) Move the S Main Brake Assembly in the direction of the arrow.
- (3) Install the new S Reel Table Assembly while being careful not to pinch the Tension Regulator Band Assembly.
- (4) Install the Reel Table Stopper and tighten it with the fixing screw.
- (5) Press the M-mode select button of the Mode Selector and set to the **LOADING/UNLOADING** mode.
- (6) After replacement, perform the FWD running more than two minutes. Then, perform the FWD Back Tension Adjustment referring to Section 5-5.
- (7) Install the Cassette-up Compartment Assembly referring to Section 2-3.



4-14. REPLACEMENT OF THE T REEL TABLE ASSEMBLY

Tools: Mode Selector (Ref. No. J-13)
Sony Oil

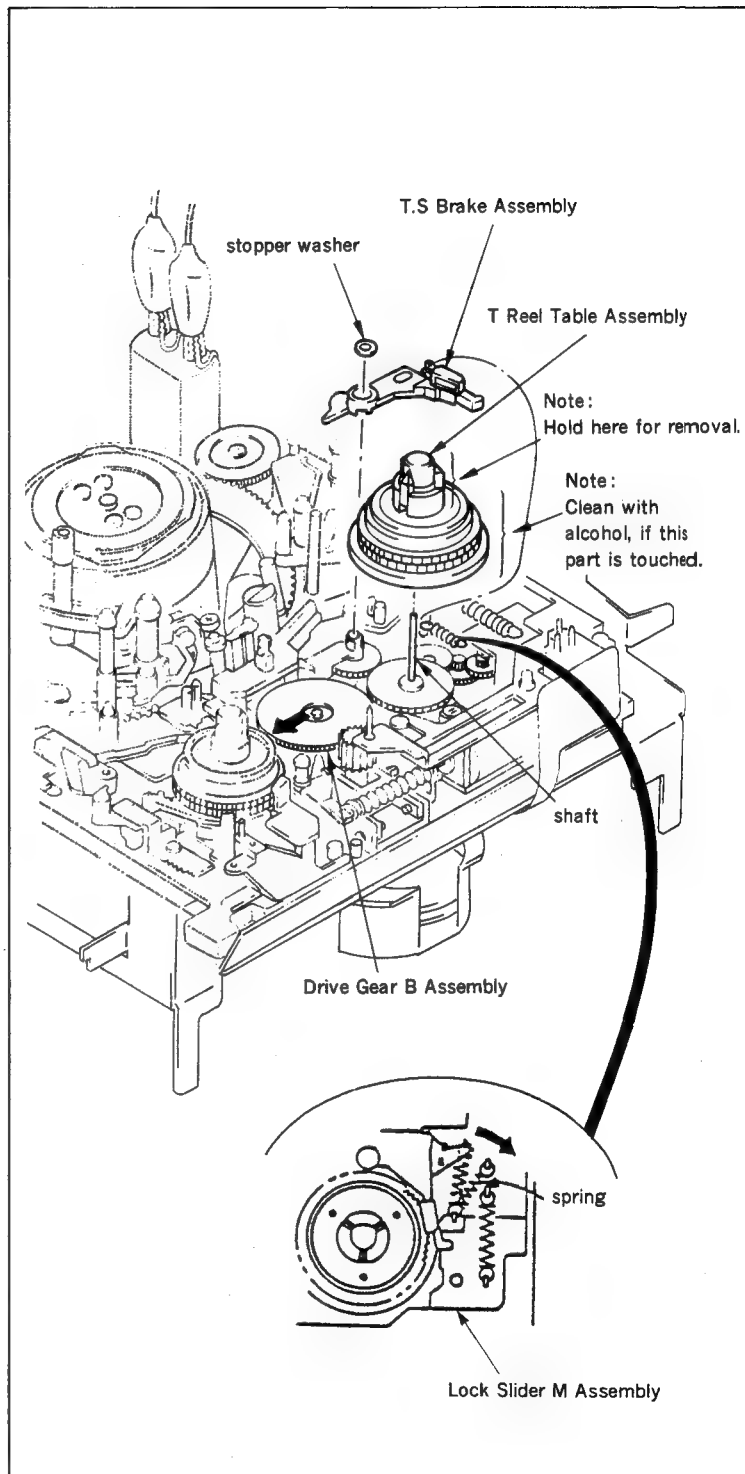
Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Press the L-mode select button of the Mode Selector and set to the **UNLOADING WAIT** mode.
- (3) Hook the spring which is hooked on the T.S Brake Assembly to the claw of the Lock Slider Assembly.
- (4) Remove the stopper washer and remove the T.S Brake Assembly.
- (5) Press the M-mode select button of the Mode Selector and set to the **EJECT** mode.
- (6) Move the Drive Gear B Assembly in the direction of the arrow.
- (7) Remove the T Reel Table Assembly.

Note: Be sure to hold the upper reel claw when removing the T Reel Table. (Note of figure)

Installation:

- (1) Apply a half drop of oil on the top point of the Reel Shaft.
- (2) Move the Drive Gear B Assembly in the direction of the arrow. (Check that the Mode Selector sets to **EJECT** mode.)
- (3) Replace the T Reel Table Assembly with a new one.
- (4) Assemble the parts with Steps (4) and (5) in reverse order.
- (5) Set the L-mode to **LOADING TOP** mode and set the M-mode to **LOADING/UNLOADING** mode.
- (6) Install the Cassette-up Compartment Assembly referring to Section 2-3.



4-15. REPLACEMENT OF THE PINCH PRESS ARM ASSEMBLY

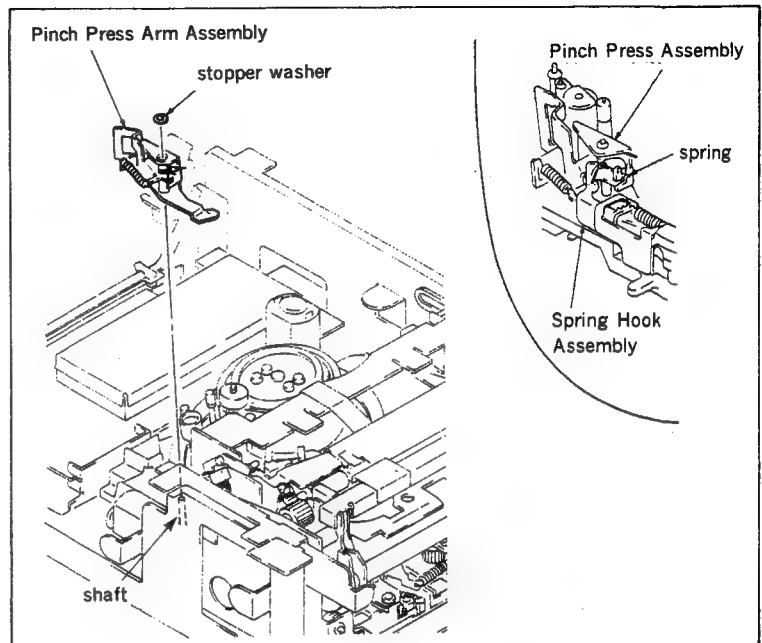
Tool: Sony Oil

Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Hook the spring which is hooked to the Spring Hook Assembly to the Pinch Press Assembly as shown in the figure.
- (3) Remove the stopper washer and remove the Pinch Press Arm Assembly.

Installation:

- (1) Apply a half drop of oil on the shaft.
- (2) Replace the Pinch Press Arm Assembly with a new one.
- (3) Assemble the parts with Removal Steps (1) to (3) in reverse order.

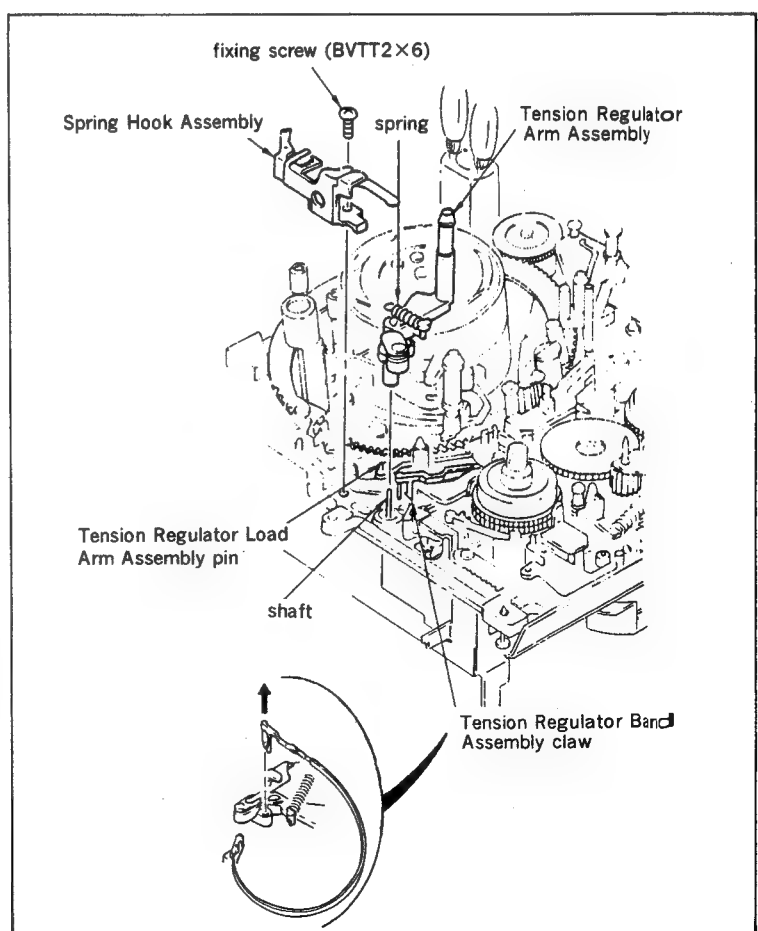


4-16. REPLACEMENT OF THE TENSION REGULATOR ARM ASSEMBLY

Tools: Mode Selector (Ref. No. J-13)
Sony Oil
Locking Compound

Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Hook the spring which is hooked to the Spring Hook Assembly to the Pinch Press Arm Assembly.
- (3) Remove the spring which is hooked to the Tension Regulator Spring Hook Assembly.
(Make a note of the hooking position.)
- (4) Remove the fixing screw and remove the Tension Regulator Spring Hook Assembly.
- (5) Press the M-mode select button of the Mode Selector and set to the **FF/REW** mode.
- (6) Remove the claw of the Tension Regulator Band Assembly.
- (7) Remove the Tension Regulator Arm Assembly.



Installation:

- (1) Apply a half drop of oil on the shaft.
- (2) Replace the Tension Regulator Arm Assembly with a new one.
- (3) Install the Tension Regulator Arm Assembly while inserting the pin of the Tension Regulator Load Arm Assembly in the cam groove (on the back of the Arm) of the Tension Regulator Arm Assembly.
- (4) Install the claw of the Tension Regulator Band Assembly.
Note: Do not touch the inside of the band and bend it.
- (5) Press the M-mode select button of the Mode Selector and set to the LOADING/UNLOADING mode.
- (6) Install the Tension Regulator Spring Hook Assembly and tighten it with the fixing screw.
- (7) Smear the Locking Compound to the head of the fixing screw.
- (8) Assemble the Parts with Removal Steps (1) to (3) in reverse order.

Note: After replacement, perform the Tape Path Check referring to Section 6-6.

4-17. REPLACEMENT OF THE TENSION REGULATOR BAND ASSEMBLY

Tools: Mode Selector (Ref. No. J-13)
Cassette Tape
Dial Tension Gauge (Ref. No. J-6)
Tension Measurement Reel (30 mm dia.)
(Ref. No. J-7)

Removal:

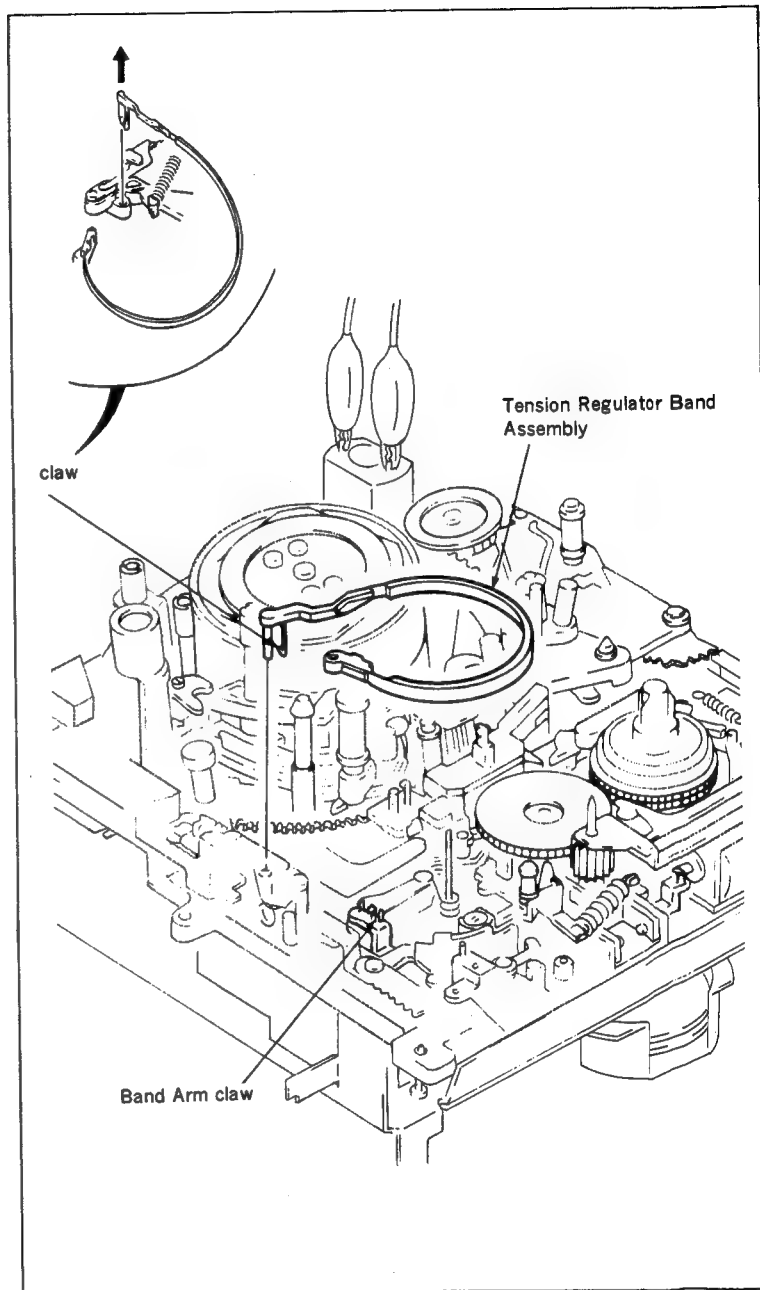
- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Remove the S Reel Table Assembly referring to Section 4-13.
- (3) Release the claw of the Band Arm and remove one side of the Tension Regulator Band Assembly.
- (4) Release the claw from the Tension Regulator Arm Assembly and remove the Tension Regulator Band Assembly.

Installation:

- (1) Replace the Tension Regulator Band Assembly with a new one.
- (2) Install the Tension Regulator Band Assembly with Removal Steps (3) and (4) in reverse order.

Note: Do not touch the inside of the band and bend it.

- (3) Install the S Reel Table Assembly referring to Section 4-13.
- (4) After replacement, perform the FWD running more than two minutes and then perform the FWD Back Tension Adjustment referring to Section 5-5.
- (5) Install the Cassette-up Compartment Assembly referring to Section 2-3.



4-18. REPLACEMENT OF THE L SLIDER ASSEMBLY

Tools: Mode Selector (Ref. No. J-13)
Sony Grease

Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Remove the Fly Wheel referring to Section 4-1.
- (3) Remove the Threading Ring Assembly referring to Section 4-4.
- (4) Remove the Entrance Guide (P) Assembly referring to 4-10.
- (5) Remove the Slant Guide Block Assembly referring to Section 4-11.
- (6) Press the L-mode select button of the Mode Selector and set to the **DRUM START** mode.
- (7) Remove the Slant Guide Drive Gear.
- (8) Remove the two stopper washers from the L Slider Assembly.
- (9) While pushing the projection of the RL Arm Assembly in the direction of the arrow, lift the right side of the L Slider Assembly and remove it from the shaft.
- (10) Lift the right side of the L Slider Assembly as shown in figure 2 and remove the pin of the Tension Regulator Load Arm Assembly from the cam groove of the Tension Regulator Arm Assembly, and then remove the L Slider Assembly.
- (11) Remove the stopper washer and remove the Tension Regulator Load Arm Assembly.

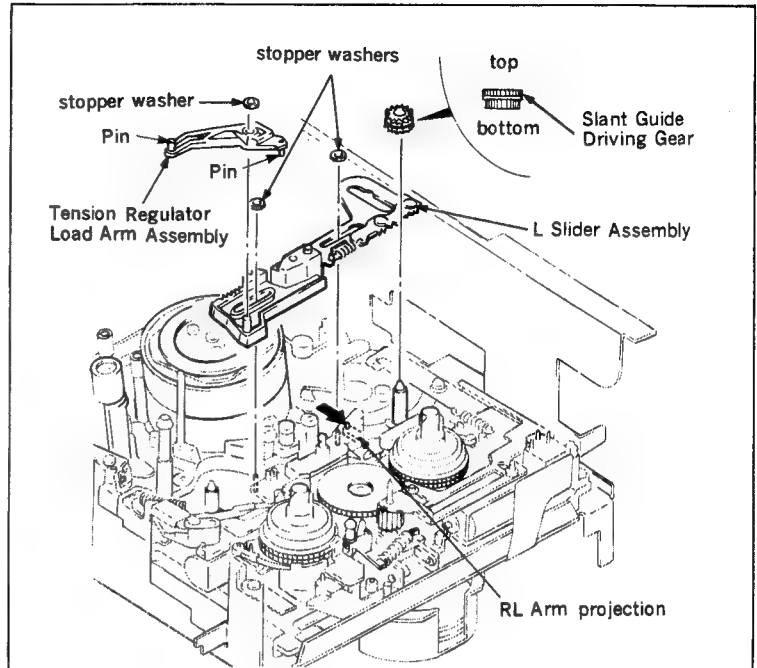


Fig. 1

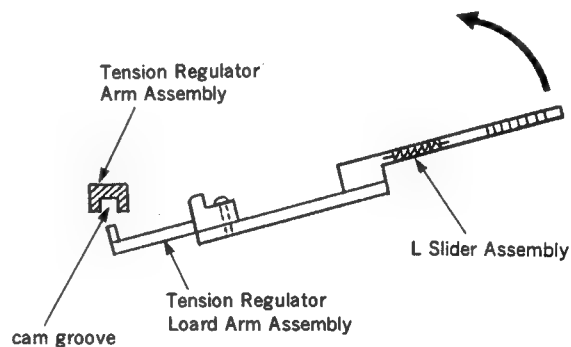


Fig. 2

Installation:

- (1) Replace the L Slider Assembly with a new one and smear Sony Grease to the three longitudinal holes as shown in figure 3.
- (2) Assemble the parts with Removal Steps (8) to (11) in reverse order.

Note: When inserting the pin of the Tension Regulator Load Arm Assembly in the cam groove of the Tension Regulator Arm Assembly, insert the another pin into the groove of the M Slider.

- (3) Press the L-mode select button of the Mode Selector and align the right edges of the L Slider Assembly and the Lock Slider M Assembly. (fig. 4)
- (4) Engage the Slant Guide Drive Gear with L Slider Assembly so that the notch of the Drive Gear is 1 tooth away from the left and gear of the L Slider Assembly as shown in the figure 4.
- (5) Assemble the parts with Removal Steps (1) to (5) in reverse order.

Note: After replacement, perform the Tape Path Adjustment referring to Section 6.

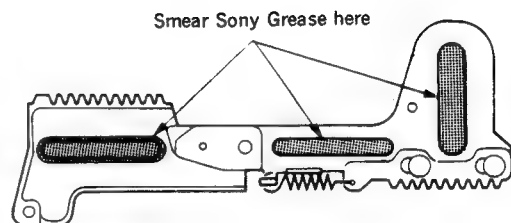


Fig. 3

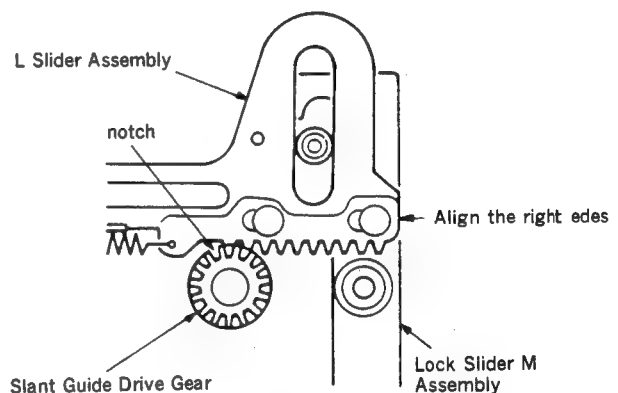


Fig. 4

4-19. REPLACEMENT OF THE L-SWITCH ASSEMBLY

Tools: Mode Selector (Ref. No. J-13)

Sony Oil

Sony Grease

Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Remove the Fly Wheel referring to Section 4-1.
- (3) Remove the Threading Ring Assembly referring to Section 4-4.
- (4) Remove the Entrance Guide (P) Assembly referring to Section 4-10.
- (5) Remove the Slant Guide Block Assembly referring to Section 4-11.
- (6) Remove the L Slider Assembly referring to Section 4-18.
- (7) Remove the Lock Slider Retainer.
- (8) Remove the tension spring which is hooked to the Lock Slider A.
- (9) Remove the fixing screw and remove the Lock Slider A.
- (10) Remove the stop washer of the Drive Changer Assembly and remove the torsion spring.
- (11) Remove the Drive Changer Assembly.
- (12) Disconnect the connector (6P) on the L-switch Assembly.
- (13) Remove the two fixing screws and remove the L-switch Assembly.

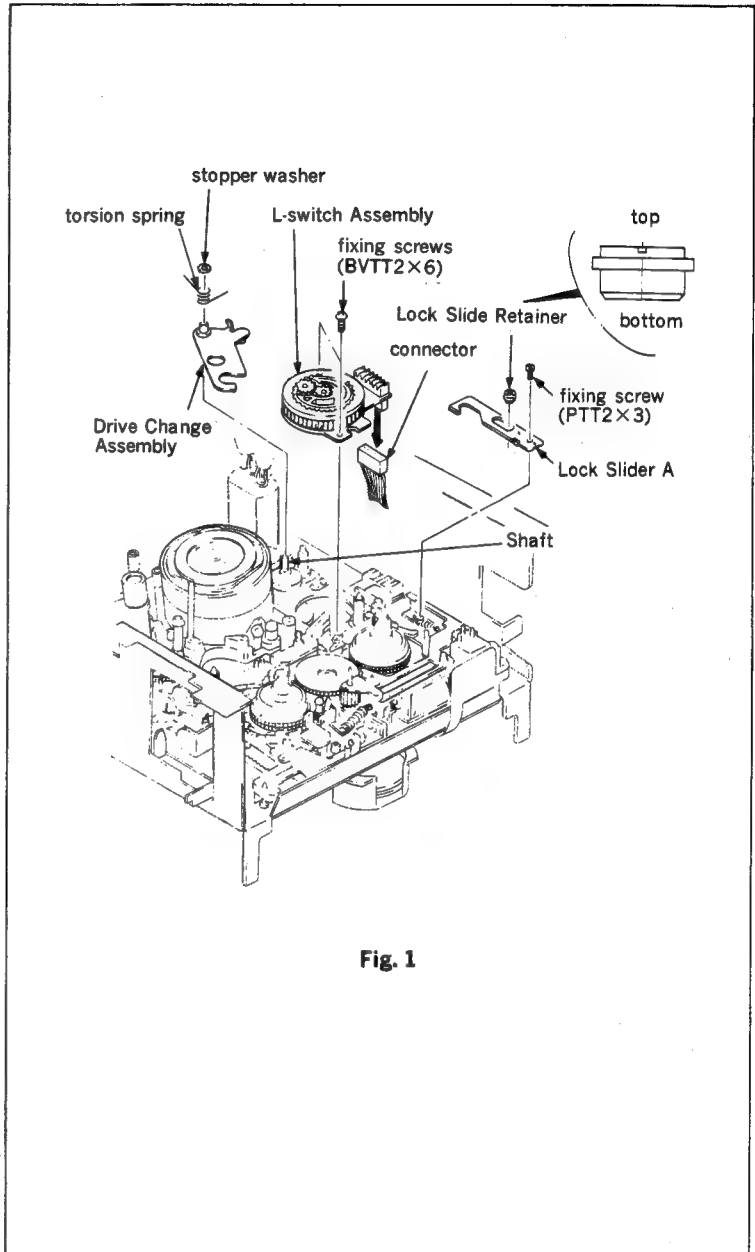


Fig. 1

Installation:

- (1) Replace the L-switch Assembly with a new one and apply a half drop of oil on the Planetary Roller Shaft.
- (2) Assemble the parts with Removal Steps (12) and (13) in reverse order.
- (3) Press the L-mode select button (right or left) of the Mode Selector and check that the L-switch Assembly rotates.
- (4) Apply a half drop of oil on the fixing shaft of the Drive Changer Assembly.
- (5) Smear Sony Grease to the U groove of the Drive Changer Assembly as shown in figure 2.
- (6) Assemble the parts with Removal Steps (10) and (11) in reverse order.
- (7) Press the L-mode select button (right or left) of the Mode Selector and check that the L-switch Assembly rotates.
- (8) Assemble the parts with Removal Steps (7) to (9) in reverse order.
- (9) Press the L-mode select button (right or left) of the Mode Selector so that the Planetary Roller Shaft is placed to the position shown in figure 3.
- (10) Assemble the parts with Removal Steps (1) to (6) in reverse order.

Note: After replacement, perform the Tape Path Adjustment referring to Section 6.

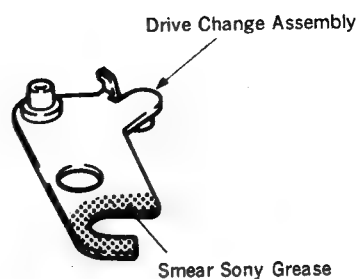


Fig. 2

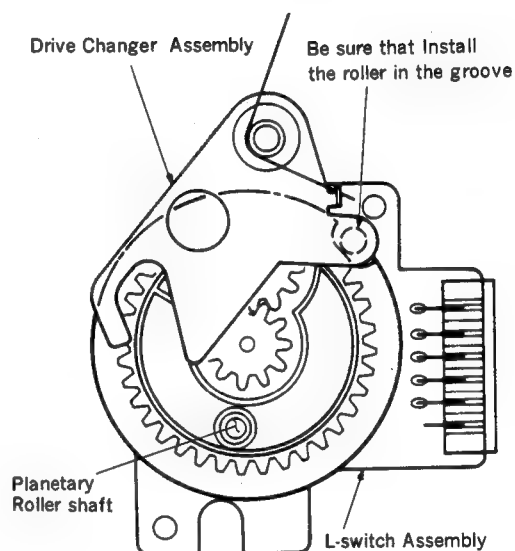


Fig. 3

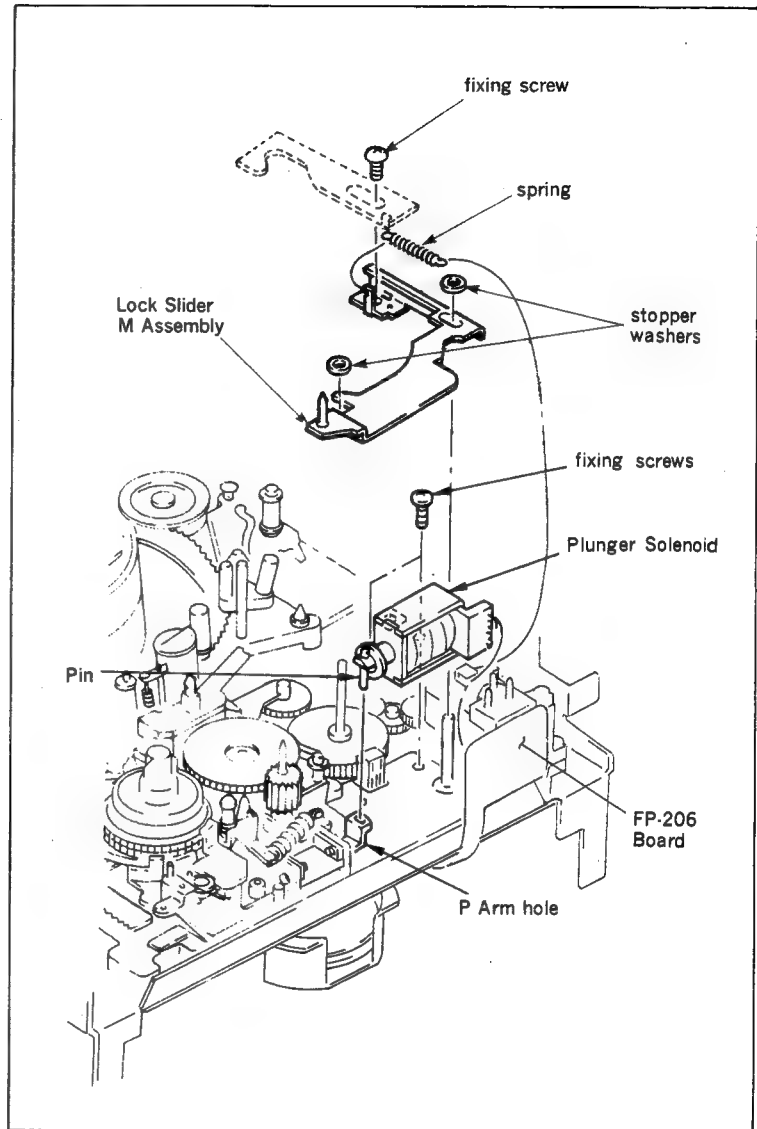
4-20. REPLACEMENT OF THE PLUNGER SOLENOID

Removal:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (3) Remove the spring which is hooked to the Lock Slider M Assembly.
- (4) Remove the two stopper washers.
- (5) Remove the fixing screw and remove the Lock Slider M Assembly.
- (6) Unsolder the three terminals of the Plunger Solenoid of the FP-206 Board.
- (7) Remove the two fixing screws and remove the Plunger Solenoid. (At this time, be careful not to damage the T Reel Assembly with a screwdriver, and do not touch it.)

Installation:

- (1) Replace the Plunger Solenoid with a new one.
- (2) Insert the pin of the Plunger Solenoid into the hole of the P Arm and install the new Plunger Solenoid with the two fixing screws. (At this time, be careful not to damage the T Reel Assembly with a screwdriver and do not touch it.)
- (3) Assemble the parts with Removal Steps (1) to (6) in reverse order.



4-21. REPLACEMENT OF THE M-SWITCH ASSEMBLY

Tools: Mode Selector (Ref. No. J-13)
Sony Oil

Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Disconnect the connector (CN301) on the RS-31 Board.
- (3) Remove the T Reel Table Assembly referring to Section 4-14.
- (4) Remove the stopper washer and remove the Drive Gear B Assembly.
- (5) Remove the LD-1 Board. (fig. 1)
- (6) Remove the Lock Slider M Assembly referring to Removal Steps (3) to (5) of Section 4-20.
- (7) Remove the tension spring and remove the B Release Arm Assembly.
- (8) Check that the M-mode is put into **EJECT** mode.
- (9) Remove the stopper washer and remove the Mode Output Gear.
- (10) Release the two claws of the Control Motor Cover and remove the Push Switch.
- (11) Disconnect the connector (6P) on the M-switch Assembly.
- (12) Remove the two fixing screws and remove the Control Motor Cover L.
- (13) Remove the fixing screw and while lifting up the M-switch Assembly, push the T.S Release Arm in the direction of the arrow A. Then push the T Main Brake Assembly in the direction of the arrow B and remove the M-switch Assembly.

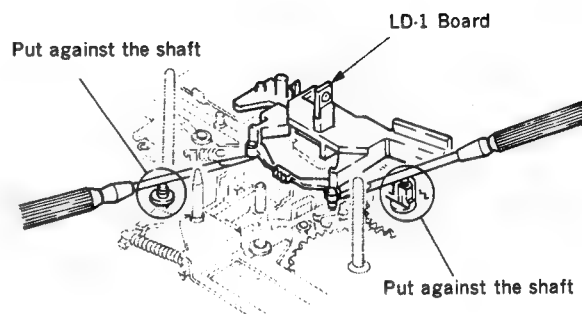


Fig. 1

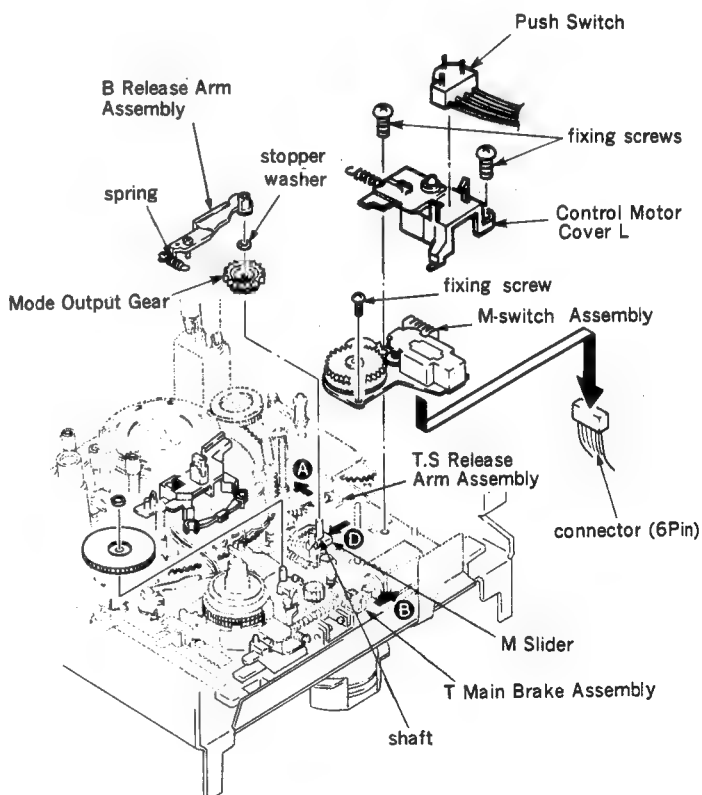


Fig. 2

How to removal the DC Motor:

- (1) Unsolder the two terminals at the C points as shown in figure 3 and remove the DC Motor from the MS-4 Board. (fig. 3)

Installation:

- (1) Replace the M-switch Assembly with a new one.
- (2) Assemble the parts with Removal Steps (10) to (13) in reverse order.
- (3) Check that the mechanical block is put into **EJECT** mode.
- (4) Check that the M Slider moves fully in the direction of arrow D. (fig. 2)
- (5) Apply a half drop of oil on the shaft of the Mode Output Gear. (fig. 2)
- (6) Install the Mode Output Gear so that the center of the M-switch Assembly Gear and the two positioning holes are lined up. (fig. 4)
- (7) Install the stopper washer to the shaft of the Mode Output Gear.
- (8) Press the M-mode select button of the Mode Selector and set to the **LOADING/UNLOADING** mode.
- (9) Assemble the parts with Removal Steps (1) to (7) in reverse order.

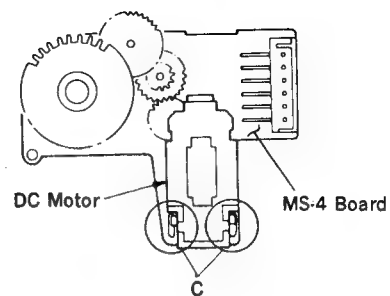


Fig. 3

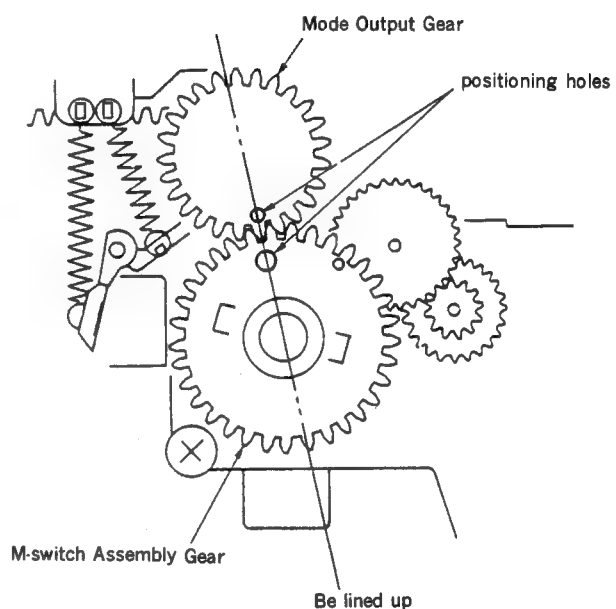


Fig. 4

4-22. REPLACEMENT OF THE M SLIDER

Tools: Mode Selector (Ref. No. J-13)

Sony Oil

Sony Grease

Removal:

- (1) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (2) Remove the Threading Ring Assembly referring to Section 4-4.
- (3) Remove the S Reel Table Assembly referring to Section 4-13.
- (4) Remove the T Reel Table Assembly referring to Section 4-14.
- (5) Remove the Pinch Press Arm Assembly referring to Section 4-15.
- (6) Remove the Tension Regulator Arm Assembly referring to Section 4-16.
- (7) Remove the Tension Regulator Band Assembly referring to Section 4-17.
- (8) Remove the Drive Gear (B) Assembly, LD-1 Board, Lock Slider M Assembly and B Release Arm Assembly referring to Removal Steps (2) to (7) of Section 4-21.
- (9) Remove the Tension Regulator Load Arm Assembly referring to Removal Step (11) of Section 4-18.
- (10) Remove the tension spring which is hooked to the S Main Brake Assembly.
- (11) Remove the two stopper washers and remove the S Main Brake Assembly and T Main Brake Assembly.
- (12) Operate the Mode Selector and set the L-mode to **LOADING TOP** mode and the M-mode to **LOADING/UNLOADING** mode.
- (13) Remove the fixing screw and remove the Drive Complete Assembly.
- (14) Remove the Mode Output Gear referring to Removal Steps (8) and (9) of Section 4-21.
- (15) Remove the two tension springs which are hooked to the REW Brake Assembly and B Release Slider.
- (16) Remove the REW Brake Assembly and remove the REW Brake Spacer.

- (17) Remove the stopper washer and remove the B Release Slider.
- (18) Remove the stopper washer and remove the Ring Lock Spring and RL Arm.
- (19) Move the M Slider to the right. Leave about 5mm space between the fixing shaft and left edge of M Slider's longitudinal hole.
- (20) Remove the E ring and remove the Pinch Press Lever Assembly.
- (21) Remove the tension spring and remove the Hard Brake S.
- (22) Remove the stopper washer and push the Mode Arm in the direction of the arrow. Lift up the left side of the M Slider to remove.

Installation:

- (1) Replace the M Slider with a new one and smear grease. (fig. 2)
- (2) Push the Mode Arm in the direction of the arrow. (fig. 1) While being careful to the positional relationship with other parts install the M Slider. Then install the stopper washer. (fig. 3)
- (3) Install the Hard Brake S and hook the tension spring to it.
- (4) Smear grease to the Pinch Press Lever Assembly. (fig. 4)
- (5) Apply a half drop of oil to the part under the groove of Pinch Press Lever Assembly's shaft.
- (6) Assemble the parts with Removal Steps (16) to (18) and (20) in reverse order.
- (7) Hook the two tension springs to the REW Brake Assembly and B Release Slider.

Note: Hook the two tension springs as follows and be careful not to mix them.

- . B Release Slider Spring:
diameter 2 mm, wire diameter 0.18mm
- . REW Brake Assembly Spring:
diameter 1.6 mm, wire diameter 0.12mm

- (8) Move the M Slider to the left fully.
- (9) Press the M mode select button of the Mode Selector and set to **EJECT** mode.
- (10) Install the Mode Output Gear referring to Installation Steps (5) to (7) in Section 4-21.
- (11) Press the M mode select button of the Mode Selector and set to the **LOADING/UNLOADING** mode.

- (12) Insert the horizontal shaft of the Drive Complete Assembly into the groove of the Upper and Lower Selection Arm and tighten the fixing screw.

- (13) Assemble the parts with Removal Steps (1) to (11) in reverse order.

Note: After replacement, perform the Tape Path Check referring to Section 6-6.

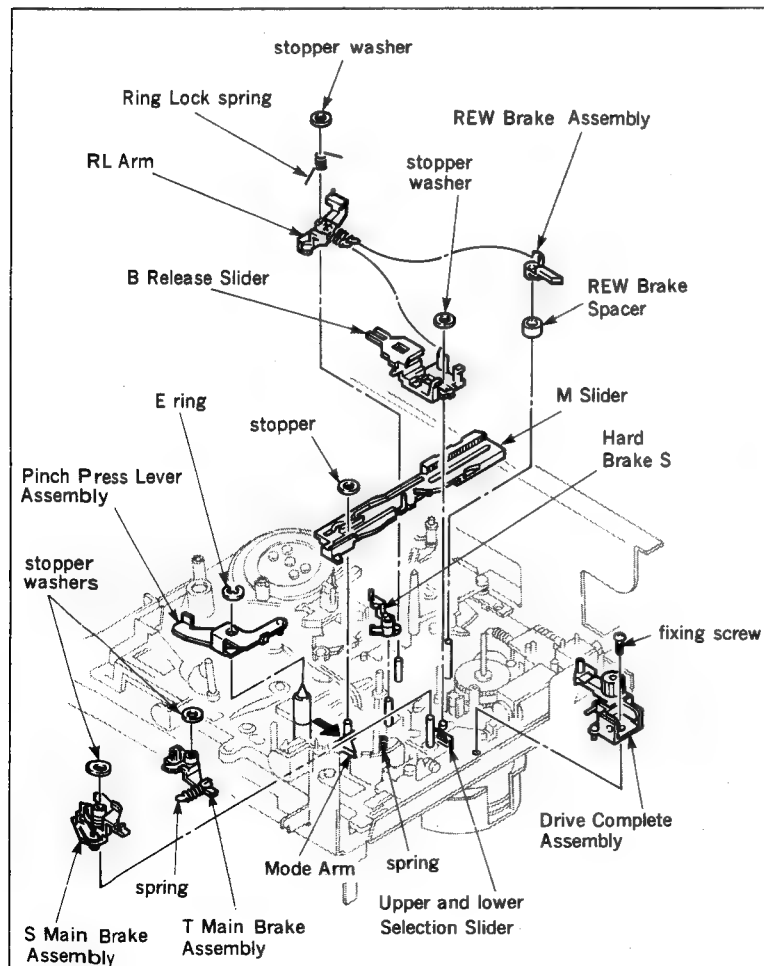


Fig. 1

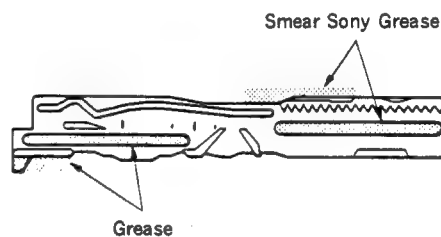


Fig. 2



Fig. 3

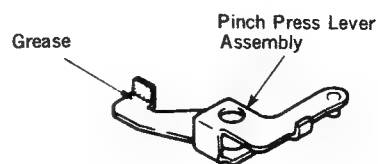
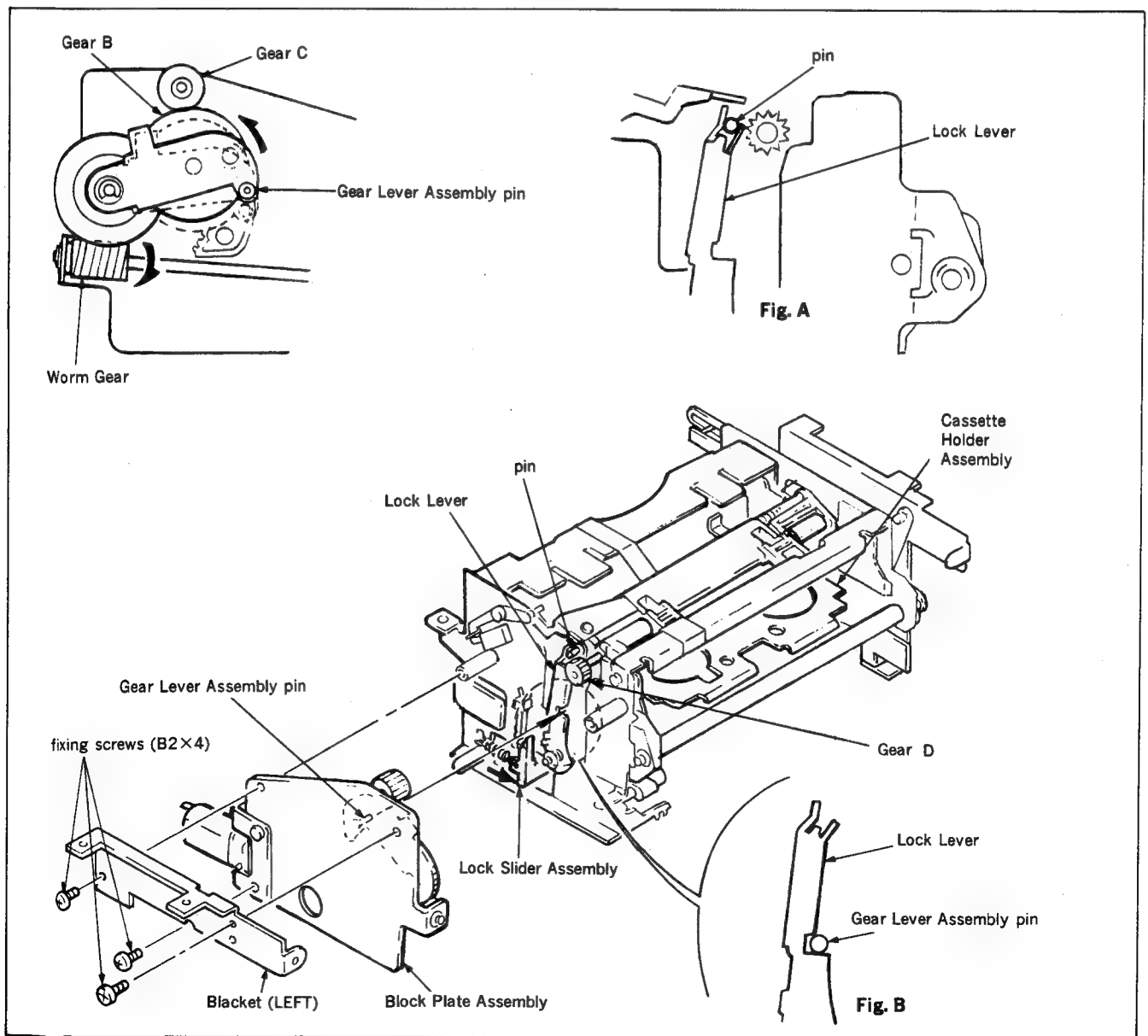


Fig. 4

4-23. INSTALLATION OF THE BLOCK PLATE ASSEMBLY

When removing the Block Plate Assembly, installing procedures are as follows:

- (1) Push the Lock Slider Assembly in the direction of the arrow and lift the Cassette Holder.
- (2) Check that the positional relationship between the Lock Lever and pin is as shown in figure A.
- (3) Turn the Worm Gear in the direction of the arrow and engage the Gear B and Gear C.
- (4) While checking that positional relationship between the pin of the Gear Lever Assembly and Lock Lever is as shown in figure B, fix the Block Plate Assembly and Blacket (LEFT) with three fixing screws.
- (5) Check that the Gear C and D are engaged.

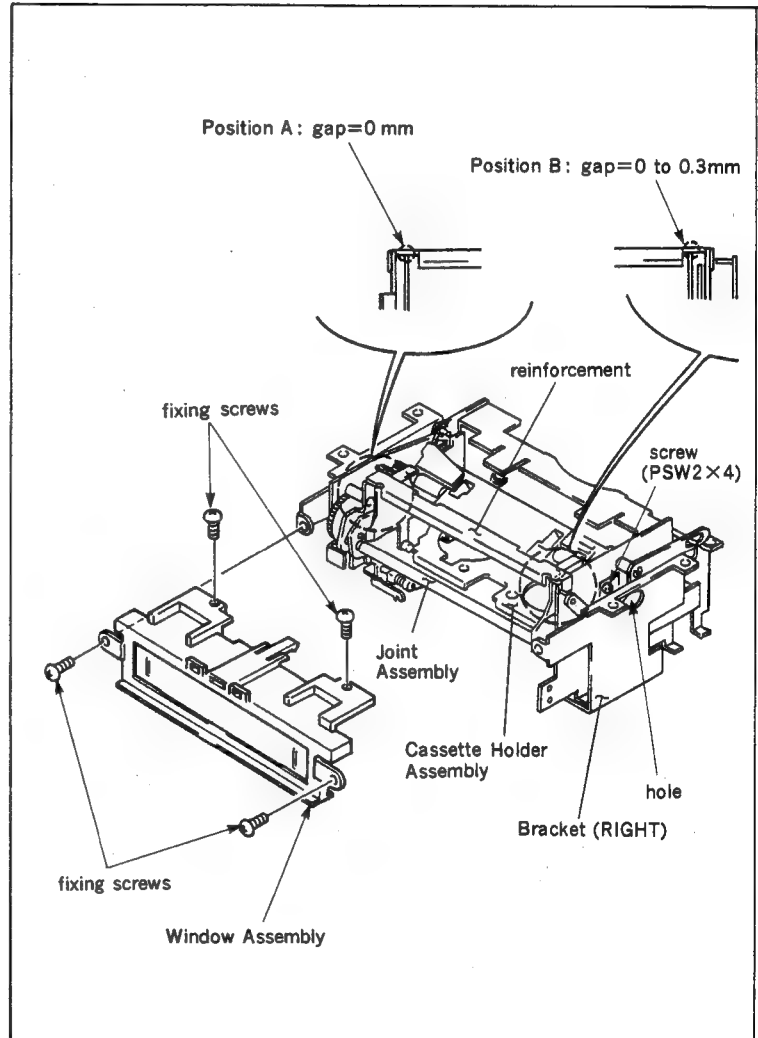


4-24. PARALLELISM ADJUSTMENT OF THE CASSETTE HOLDER BLOCK

When the following trouble happen, perform this adjustment. When inserting or ejecting the cassette, it is caught in the Cassette Holder Assembly or Joint Assembly, etc., and does not move smoothly.

Adjustment procedure:

- (1) Open the MB-19 Board referring to Section 2-5-5.
- (2) Remove the Cassette-up Compartment Assembly referring to Section 2-3.
- (3) Remove the four fixing screws and remove the Window Assembly.
- (4) Loosen the screw (PSW2 X 4) from the hole of the Braket (RIGHT).
- (5) Push the bottom of the Cassette Holder Assembly against the reinforcement, and adjust the position so that there is no clearance at points A and B.
- (6) Tighten the screw (PSW2 X 4) and smear locking compound to it.
- (7) Assemble the parts with Steps (1) to (3) in reverse order.



SECTION 5

TORQUE AND BACK TENSION ADJUSTMENT

After removing the Mechanical Deck and Cassette-up Compartment from the unit referring to Section 2-2 and 2-3, perform these adjustments except for Section 5-4.

5-1. CHECK OF THE MAIN BRAKE TORQUE

5-1-1. S Main Brake Torque

Tools: Mode Selector (Ref. No. J-13)

Tension Measurement Reel

(Ref. No. J-8)

Dial Tension Gauge (Ref. No. J-6)

Mode: Press the M-mode select button of the Mode Selector and set to the **FF/REW** mode.

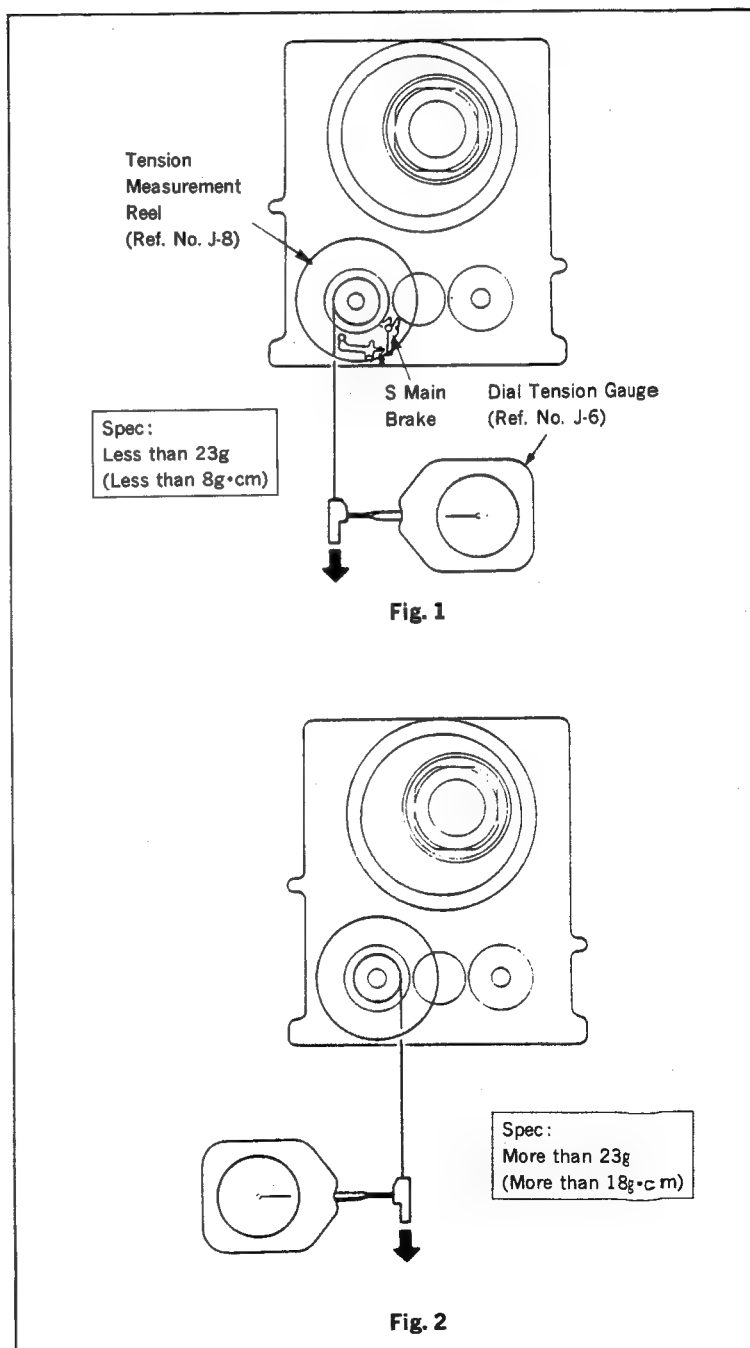
Check Procedure:

- (1) Set the Tension Measurement Reel on the S Reel Table and put the Dial Tension Gauge at the end of the string.
- (2) Pull out the Dial Tension Gauge in the direction of the arrows and check that those readings meet the required specifications as shown in figure 1 and 2.

Note: Both S Main Brake and S Soft Brake work in the **FF/REW** mode.

Adjustment Procedure:

- (1) If the reading do not meet the required specification, replace the S Main Brake or S Reel Table Assembly.



5-1-2. T Main Brake Torque

Tools: Mode Selector (Ref. No. J-13)

Tension Measurement Reel

(Ref. No. J-8)

Dial Tension Gauge (Ref. No. J-6)

Mode: Press the M-mode select button of the Mode Selector and set to the **FF/REW** mode.

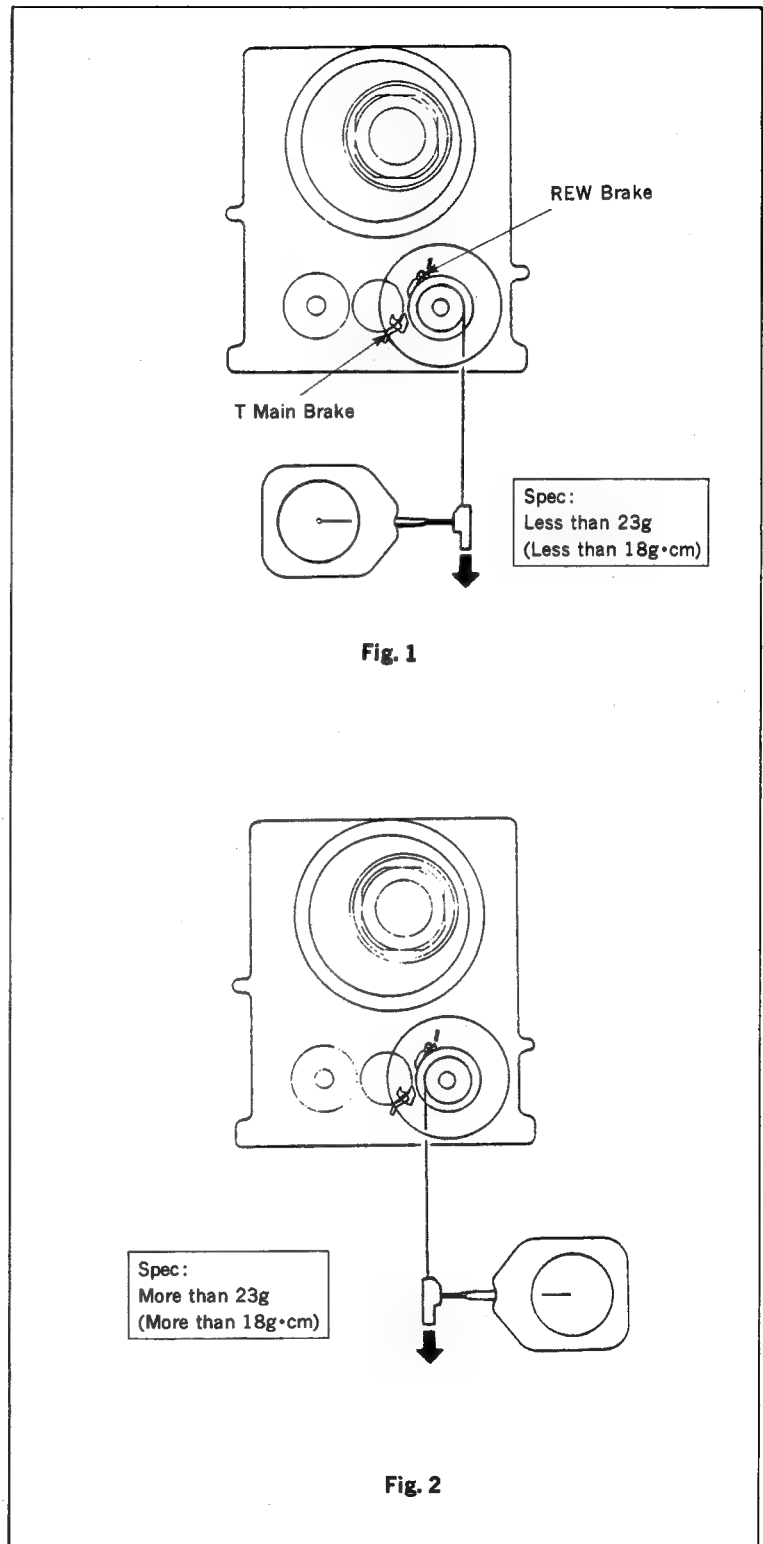
Check Procedure:

- (1) Set the Tension Measurement Reel on the T Reel Table and put the Dial Tension Gauge at the end of the string.
- (2) Pull out the Dial Tension Gauge in the direction of the arrows and check that these readings meet the required specifications as shown in figure 1 and 2.

Note: Both T Main Brake and REW Brake work in the **FF/REW** mode.

Adjustment Procedure:

- (1) If the reading do not meet the required specification, replace T Main Brake or T Reel Table.



5-2. CHECK OF THE SOFT BRAKE TORQUE

5-2-1. S Side Soft Brake Torque

Tools: Mode Selector (Ref. No. J-13)
Tension Measurement Reel
(Ref. No. J-8)
Dial Tension Gauge (Ref. No. J-6)

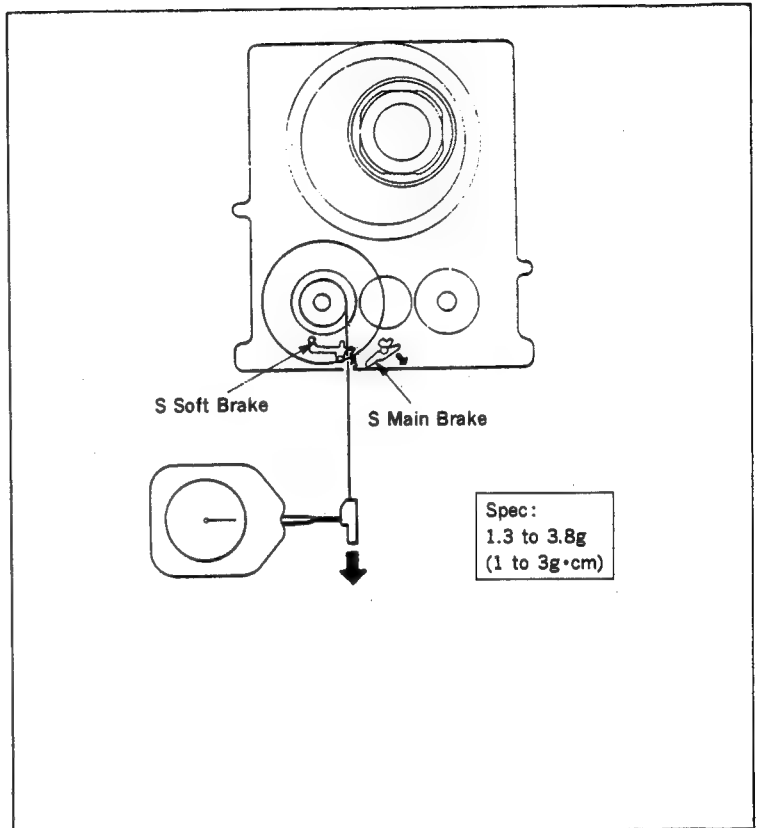
Mode: Press the M-mode select button of the Mode Selector and set to the **FF/REW** mode.

Check Procedure:

- (1) Set the Tension Measurement Reel on the S Reel Table and put the Dial Tension Gauge at the end of the string.
- (2) Release the S Main Brake by hand.
- (3) While releasing the S Main Brake, pull out the Dial Tension Gauge in the direction of the arrow. Check that this reading meets the required specification.

Adjustment Procedure:

- (1) Adjust the strength of S Soft Brake Spring by stretching or cutting.



5-2-2. T Side Soft Brake Torque

Tools: Mode Selector (Ref. No. J-13)

Tension Measurement Reel

(Ref. No. J-8)

Dial Tension Gauge (Ref. No. J-6)

Mode: Press the M-mode button of the Mode Selector and set to the **RVS** mode.

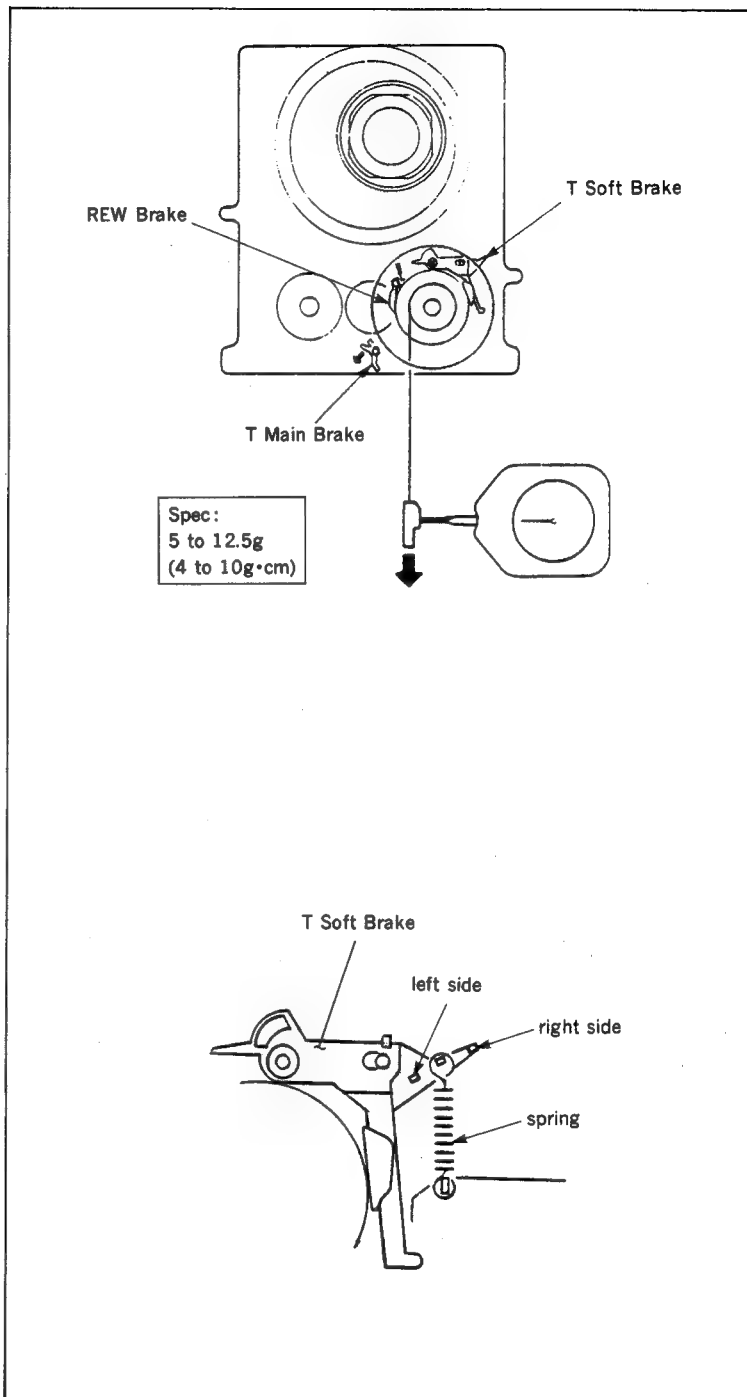
Check Procedure:

- (1) Set the Tension Measurement Reel on the T Reel Table and put the Dial Tension Gauge at the end of the string.
- (2) Release the T Main Brake by hand.
- (3) While releasing the S Main Brake, pull out the Dial Tension Gauge in the direction of the arrow. Check that this reading meets the required specification.

Note: Both T Soft Brake and REW Brake work in the RVS mode.

Adjustment Procedure:

- (1) Change the position of the tension spring which is hooked to the T Soft Brake.
 - . more than the spec. : Hook the left side.
 - . less than the spec. : Hook the right side.
- (2) If the reading do not meet the required specification with Step (1), replace the T Soft Brake or REW Brake, or both of them.



5-3. CHECK OF THE REW BRAKE TORQUE

Tools: Mode Selector (Ref. No. J-13)

Tension Measurement Reel

(Ref. No. J-8)

Dial Tension Gauge (Ref. No. J-6)

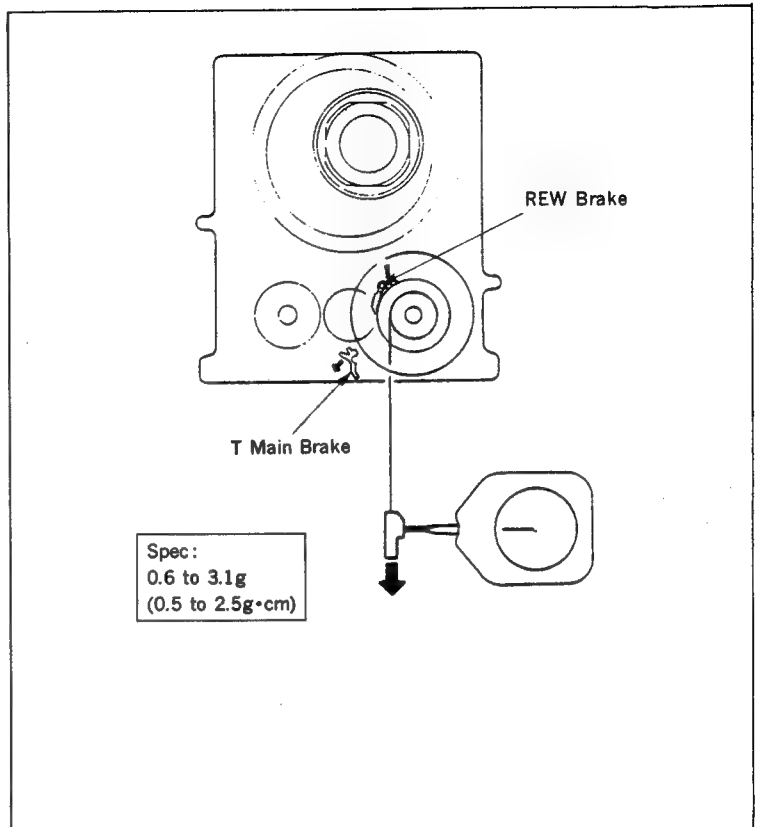
Mode: Press the M-mode select button of the Mode Selector and set to the **FF/REW** mode.

Check procedure:

- (1) Set the Tension Measurement Reel on the T Reel Table and put the Dial Tension Gauge at the end of the string.
- (2) Release the T Main Brake by hand.
- (3) While the releasing the T Main Brake, pull out the Dial Tension Gauge in the direction of the arrow. Check that this reading meet the required specification.

Adjustment Procedure:

- (1) Adjust the strength of the tension spring by stretching or cutting, or replace the REW Brake with a new one.



5-4. CHECK BY THE FWD, RVS TAKE-UP TORQUE CASSETTE

Tool: FWD, RVS take-up torque cassette

(Ref. No. J-12)

Mode: PLAY mode

Check Procedure:

- (1) Insert the FWD, RVS take-up torque cassette in the unit.
- (2) Put the unit into the PLAY mode, check that the torque reading of the T Reel Table meets the required specification.
Spec. : 9.5 to 15.5 g.cm
- (3) Put the unit into the PLAY mode and press the REW button. Immediately check that the torque reading of the S Reel Table meets the required specification.
Spec. : 17 to 23 g.cm

Adjustment procedure:

- (1) If the readings do not meet the required specifications, replace each Reel Table Assembly.

5-5. FWD BACK TENSION ADJUSTMENT

Tools: Mode Selector (Ref. No. J-13)

Tension Measurement Reel

(Ref. No. J-7)

Dial Tension Gauge (Ref. No. J-6)

Mode: Press the L-mode select button of the Mode Selector and set to the **LOADING END**. Press the M-mode select button and set to the **FWD** mode.

Check Procedure:

- (1) Remove the Cassette-up Compartment referring to Section 2-3.
- (2) Press the L-mode select button of the Mode Selector and set to the **LOADING END** mode. Press the M-mode select button and set to the **FWD** mode.
- (3) Loosen the fixing screw and move the Band Adjustment Plate in the direction of the arrow A. Check the possible movement range θ of the No. 1 Guide.
- (4) Tighten the fixing screw where the No. 1 Guide Cap is positioned at one-third of θ .
- (5) Set the Tension Measurement Reel on the S Reel Table and trail the tape along the No. 1 Guide, No. 2 Guide, No. 3 Guide, IP Roller Guide and Drum.
- (6) Put the Dial Tension Gauge at the end of the tape. Pull out the Dial Tension Gauge at a contact speed approx. 15cm/sec. in the direction of the arrow B. At this time, check that this reading meets the required specification.

Spec. : 12 to 14 g

Adjustment Procedure:

- (1) If the reading do not meet the required specification, change the position of the tension spring which is hooked to the Tension Regulator Spring Hook Assembly.
 - . more than the Spec. :
the direction of the arrow C
 - . less than the Spec. :
the direction of the arrow D

NOTE:

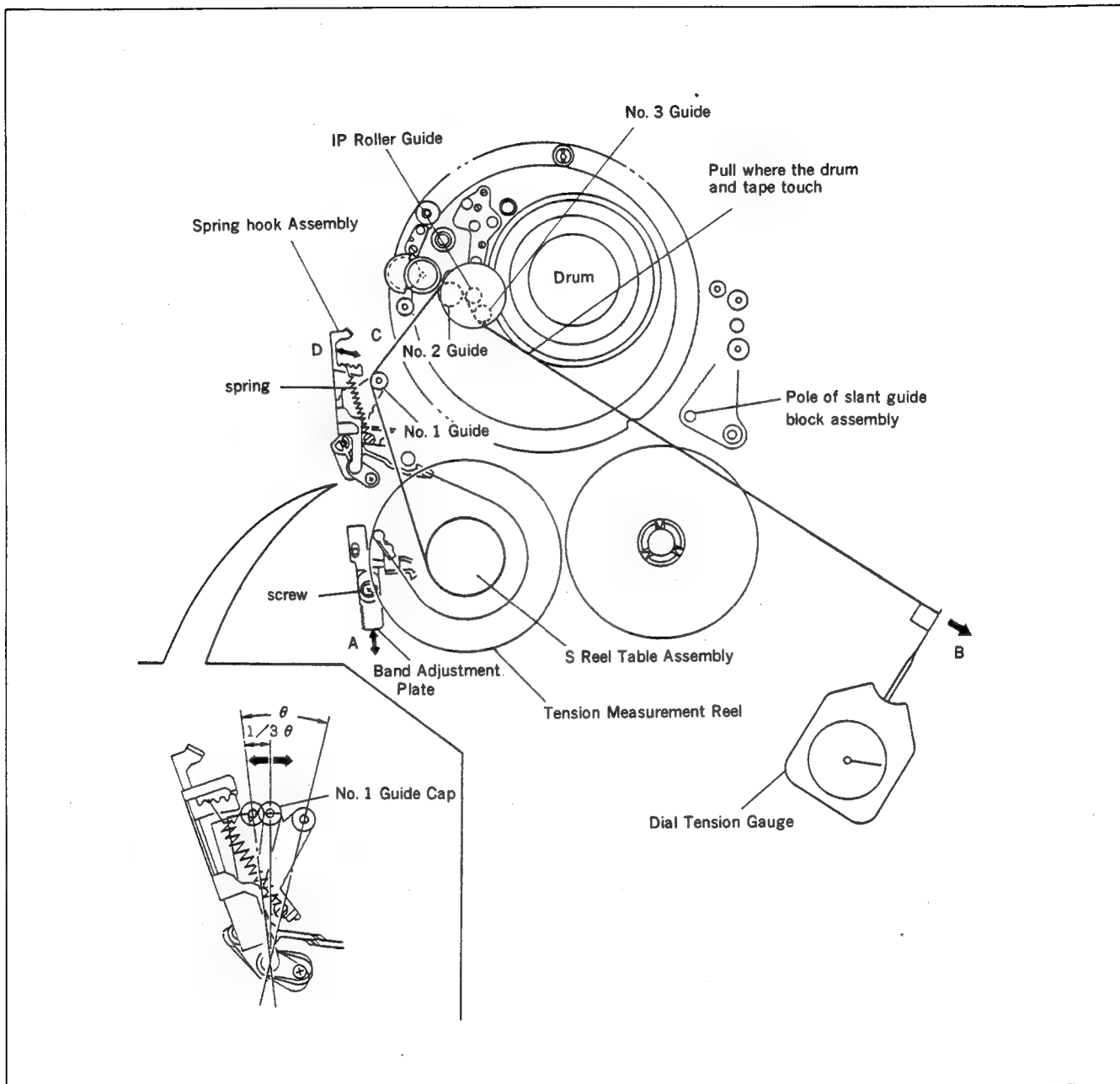
When replacing the parts as follows, perform the FWD Back Tension Adjustment.

- . Tension Regulator Band Assembly
- . S Reel Table Assembly
- . Entrance Guide (P) Assembly

When replacing these parts, perform the free running in the FWD mode for two minutes and then adjust the FWD Back Tension.

Adjustment Procedure:

- (1) Install the Cassette-up Compartment Assembly with Removal Steps Section 2-3 in reverse order.
- (2) Install the Mechanical Deck with Removal Steps Section 2-2 in reverse order.
- (3) Insert the cassette tape in the unit and perform the FWD running for two minutes.
- (4) Eject the cassette tape.
- (5) Remove the Mechanical Deck from the unit referring to Section 2-2.
- (6) Perform the FWD Back Tension Adjustment referring to Section 5-5.





SECTION 6 TAPE PATH ADJUSTMENT

.After check that the Electrical Adjustments (Sections 7 to 10) are completed, perform this adjustment.

Alignment Information

Track Shift Tool

The 8 mm Video System employs a high precision tracking ATF (Auto Track Finding) system which instantaneously controls the tape running speed with four kinds of pilot signals. In this way, the Tracking Adjustment Knob is unnecessary and it is possible to trace with accuracy. On the other hand, the adjustment of the Tape Path System was difficult in the ATF system. It was impossible to adjust perfectly because the ATF system automatically corrected even it small miss-tracking occurs. Then the Track Shift Tool (Ref. No. J-14) is used in the adjustment of Tape Path System. The Track Shift Tool can forcibly release the ATF system and can easily adjust the Tape Path System by setting the tracking amount (track shift) manually.

6-1. CONNECTION OF THE TRACK SHIFT TOOL

Use the connection cords (Ref. No. J-15 and J-16) for connection. Connect the Track Shift Tool and the unit as shown in figure 1.

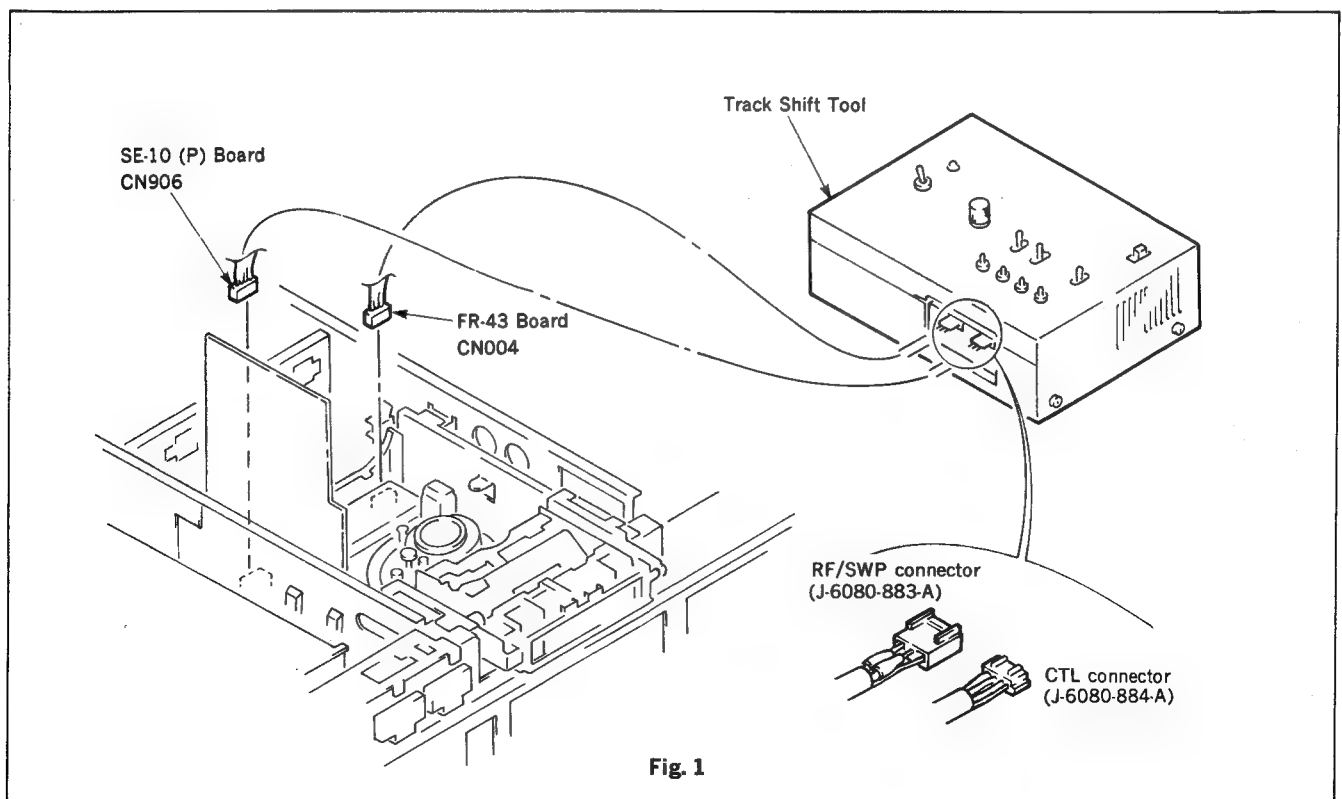
. RF/SWP connector ...

to CN004 on the FR-43 Board

. CTL connector ...

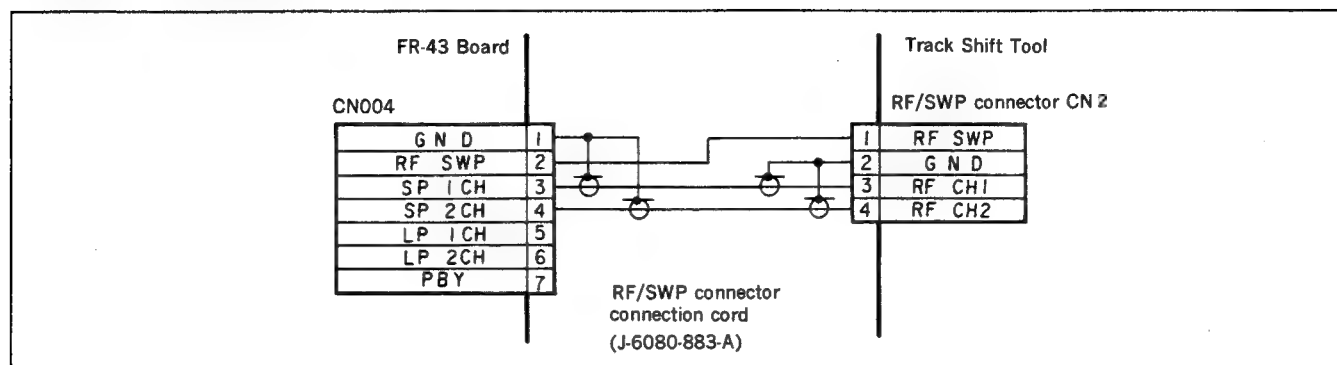
to CN906 on the SE-10(P) Board

(Please refer to operation manual of the Track Shift Tool for details.)

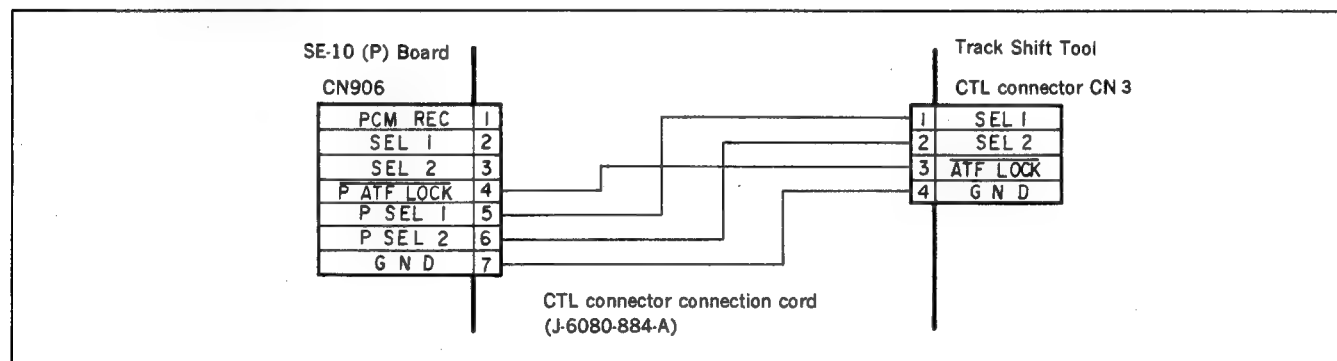


[Designated Connecting Cord]

- . RF/SWP connector connection cord
(Part No. J-6080-883-A)



- . CTL connector connection cord
(Part No. J-6080-884-A)



[Setting of the Switches]

SEL switch

When performing the track shift, set the switch to ON. When setting to OFF, the unit side controls.

PATTERN switch

Set to EV side.

ATF ADJ

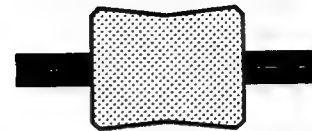
Set to OFF side.

When adjusting EVO-9800P, the other switches are not used.

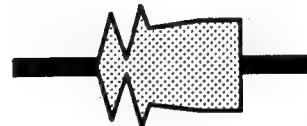
6-2. PREPARATION FOR ADJUSTMENT

Tools: Track Shift Tool (Ref. No. J-14)
 RF/SWP connector (Ref. No. J-15)
 CTL connector (Ref. No. J-16)
 Oscilloscope
 Alignment tape for tracking
 (WR5-1CP) (Ref. No. J-5)

- (1) Clean the tape path surface (the individual tape guides, drum, capstan shaft and pinch roller).
- (2) Connection of the oscilloscope
 1CH:CH2 checking pin of the Track Shift Tool
 EXT TRIG:RF SWP checking pin of the Track Shift Tool
- (3) 1. Set the SEL switch of the Track Shift Tool to OFF and play back the alignment tape for tracking (WR5-1CP). Check that the RF waveforms of both entrance and exit sides are flat. (fig. 1 (a))
2. Set the SEL switch of the Track Shift Tool to ON and check that the RF waveform of the exit side is as shown in the fig. 1 (d).
- . In case of the RF waveform at the entrance side is not flat. (fig. 1 (b))
- ... Perform Tape Entrance Side Adjustment referring to Section 6-4.
- . In case of the RF waveform at the exit side do not meet the steps 1 and 2.
- ... Perform Tape Exit Side Adjustment referring to Section 6-5.



(a) Normal



(b) Entrance side is defective.



(c) Exit side is defective.



$$\frac{5}{6}A \geq B \geq \frac{3}{4}A$$

(d)

Fig. 1

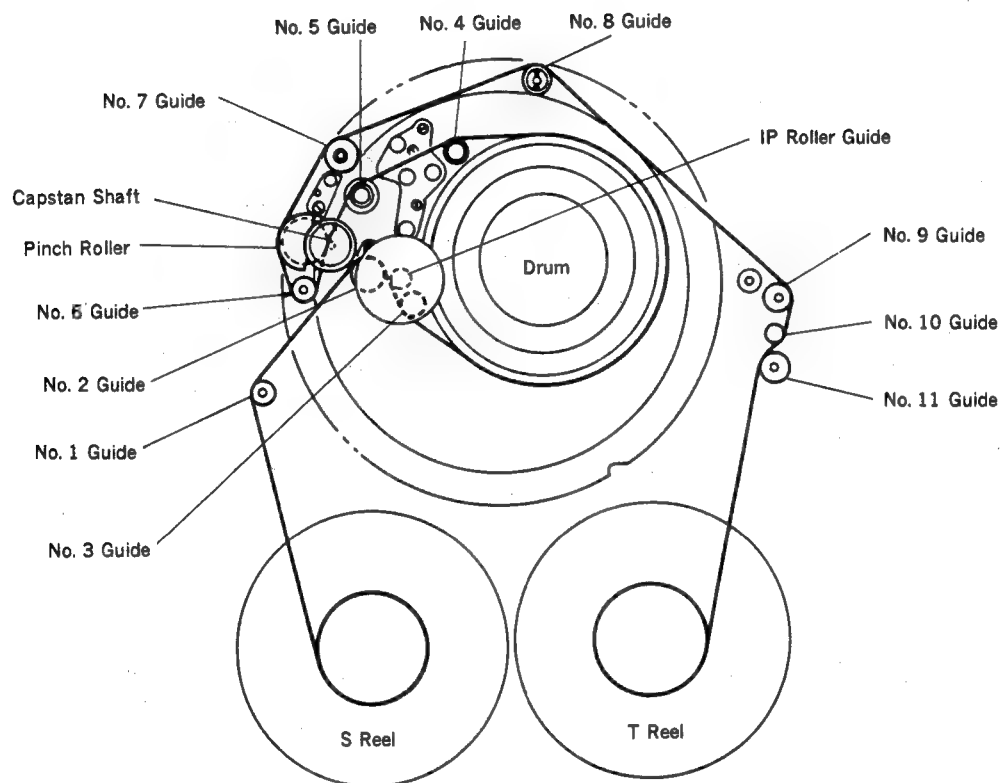
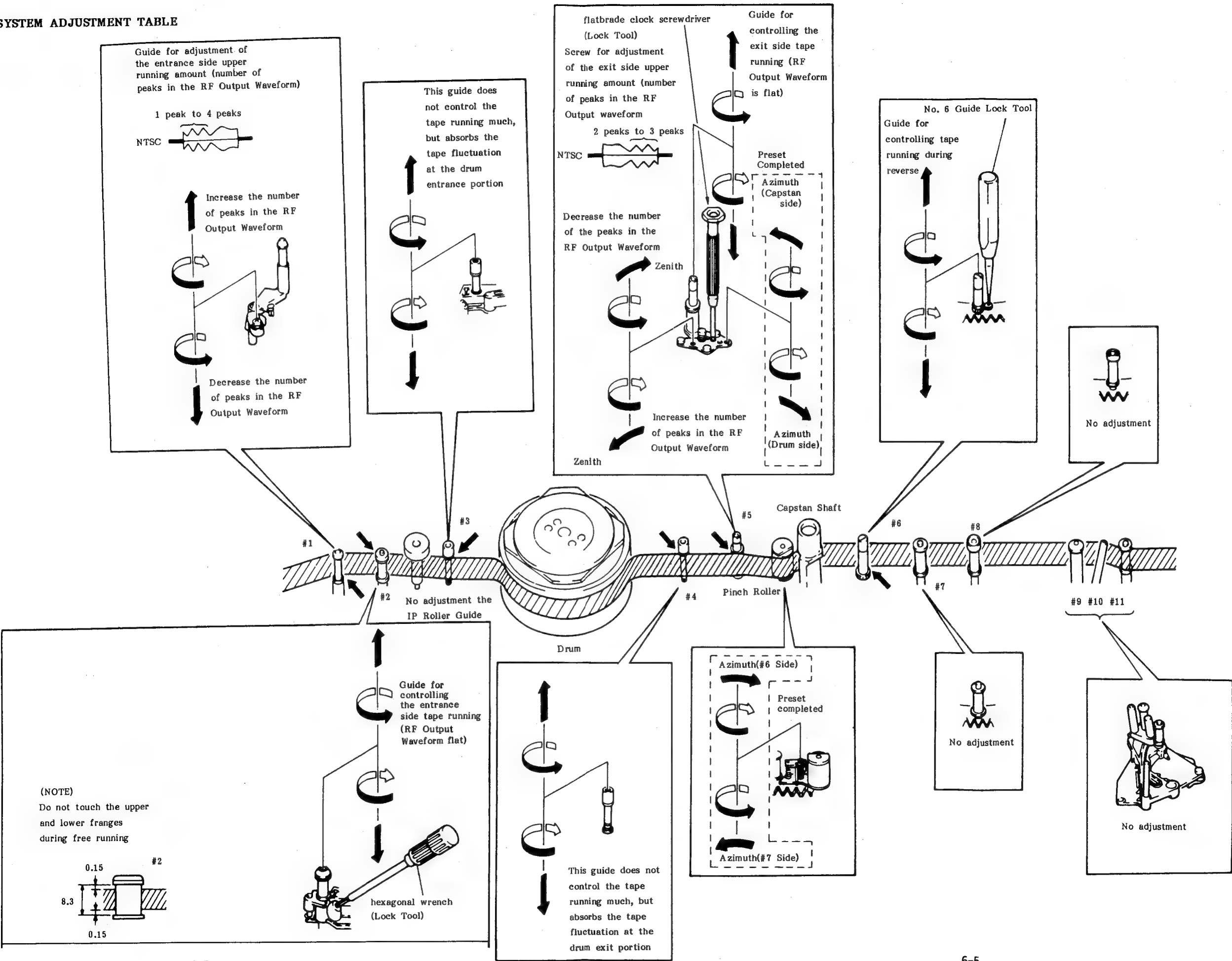
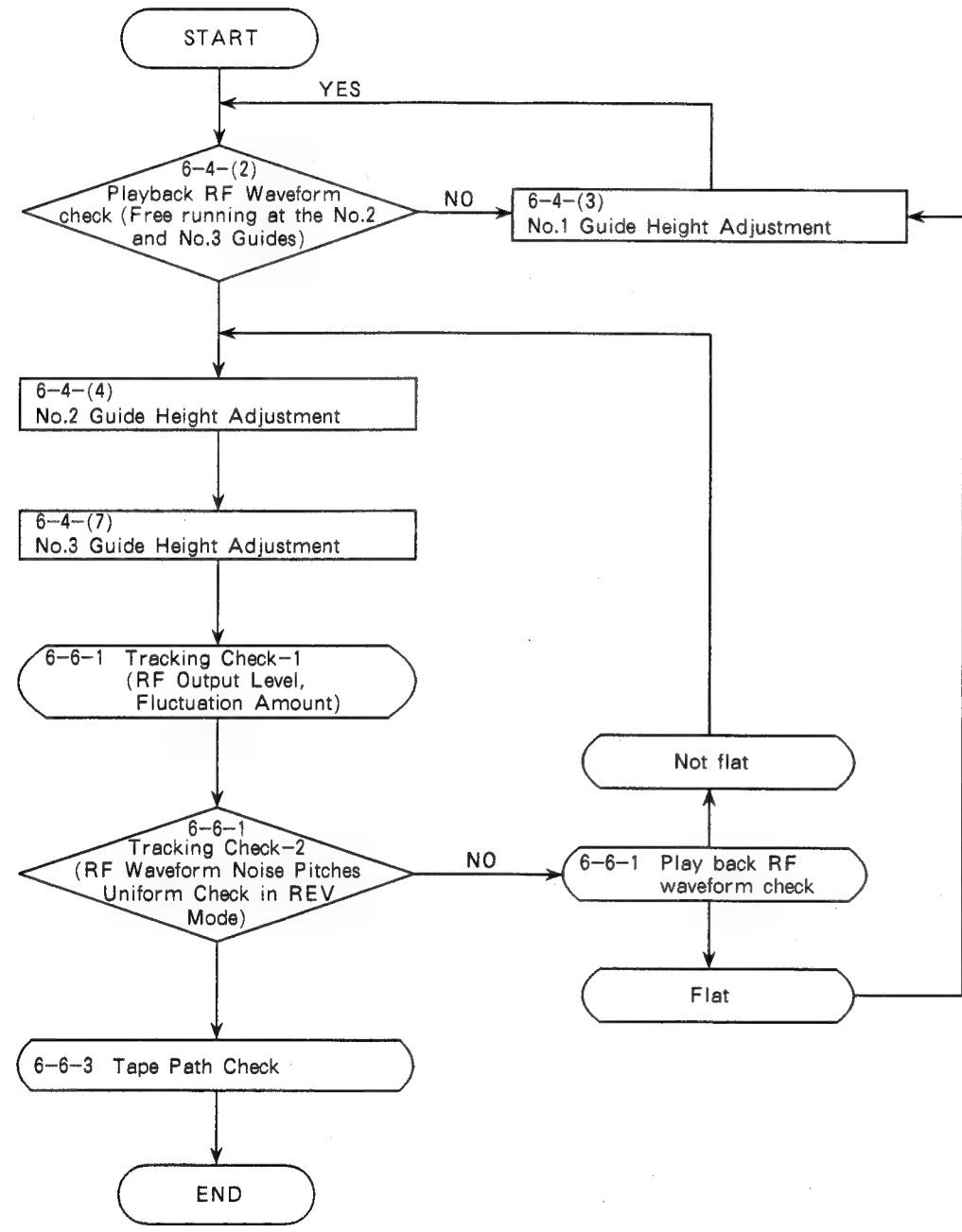


Fig. 2 Tape Guide Arrangement Diagram

6-3. TAPE PATH SYSTEM ADJUSTMENT TABLE



6-4. Tape Entrance Side Adjustment
Flow Chart of Adjustment



Mode: Play back the alignment tape
Tools: Alignment tape for tracking (WR5-1CP) (Ref. No. J-5)
 Oscilloscope
 Track Shift Tool (Ref. No. J-14)
 RF/SWP connector (Ref. No. J-15)
 CTL connector (Ref. No. J-16)
 Hexagonal screwdriver (across flat has 0.89 mm) (Ref. No J-17)
 Small adjustment mirror (Ref. No. J-4)

- Preparation:**
- (i) Remove the Top Plate referring to Section 2-1.
 - (ii) Open the MB-19 Board referring to Section 2-5-5.
 - (iii) Connect the Track Shift Tool and oscilloscope to the unit referring to Sections 6-1 and 6-2.
 - (iv) Play back the alignment tape.

- Procedure:**
- (1) Remove the Fly Wheel referring to Section 4-1.
 - (2) Loosen the No. 2 Guide Lock Screw and turn the No. 2 and No. 3 Guides counterclockwise to free the tape path at the entrance side. (fig. 1 and 2)

Note: The space between upper and lower flanges of the No. 2 Guide is narrow. Therefore, check that the tape does not touch the upper and lower flanges. If loosen the No. 2 Guide too much, the tape touches the lower flange and the RF waveform at the entrance side exceeds the original free waveform.

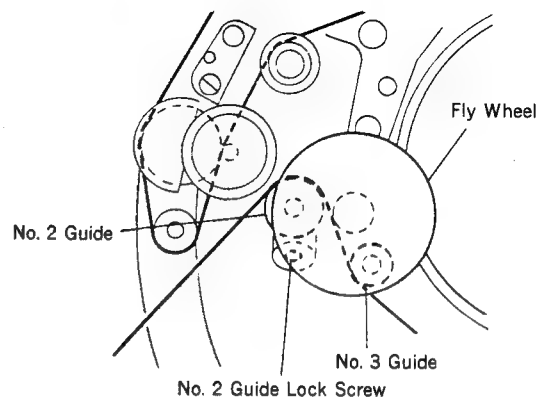


Fig. 1

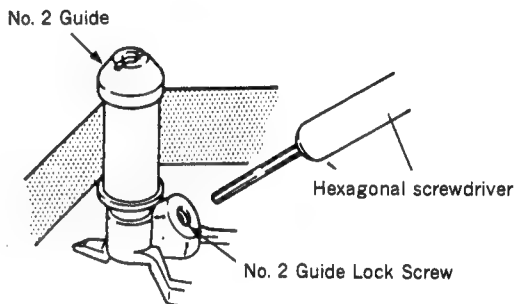


Fig. 2

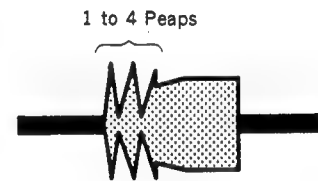


Fig. 3

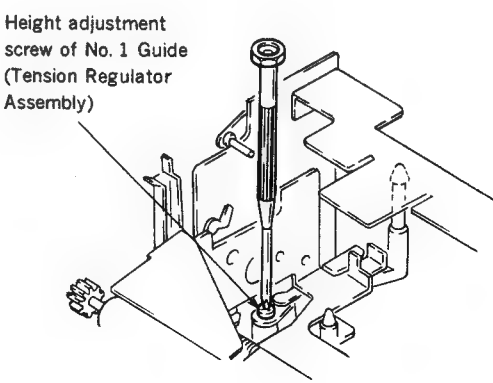


Fig. 4

- (3) Check that the RF waveform at the entrance side has 1 to 4 peaks in this condition. If not, adjust as follows. (fig. 3)

• less than 1 peak

Turn and adjust the height adjustment screw of the No. 1 Guide (Tension Regulator Arm Assembly) clockwise 90 degrees step. (fig. 4)

• more than 4 peaks

Turn and adjust the height adjustment screw (Tension Regulator Arm Assembly) counterclockwise 90 degrees step. (fig. 4)

- (4) Turn slowly the No. 2 Guide clockwise to flatten the waveform at the entrance side. (fig. 5)

Note: At this time, do not turn the No. 2 Guide too much.

- (5) Set the SEL switch of the Track Shift Tool to ON. Turn the Track Shift Knob and set the amplitude of the RF waveform to two-third position. (fig. 6)
- (6) Turn the No. 2 Guide and raise the entrance side waveform slightly. (fig. 7)
- (7) Flatten the waveform with the No. 3 Guide. (fig. 8)
- (8) Tighten the lock screw of the No. 2 Guide. (fig. 2)
- (9) After adjustment, perform Check After Adjustment referring to Section 6-6.
- (10) Smear locking compound to the No. 1 Guide Height Adjustment Screw and adjustment nut of the No. 3 Guide.
- (11) Install the Fly Wheel referring to Section 4-1.

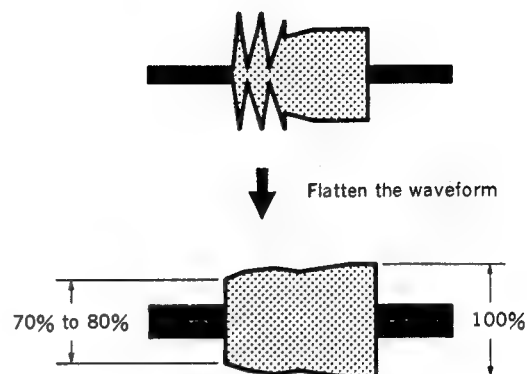


Fig. 5

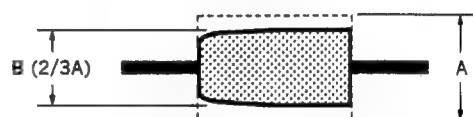
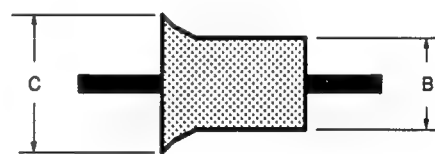


Fig. 6



$$C = 1.15B \text{ to } 1.25B$$

Fig. 7

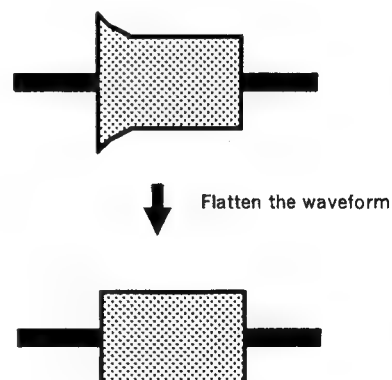
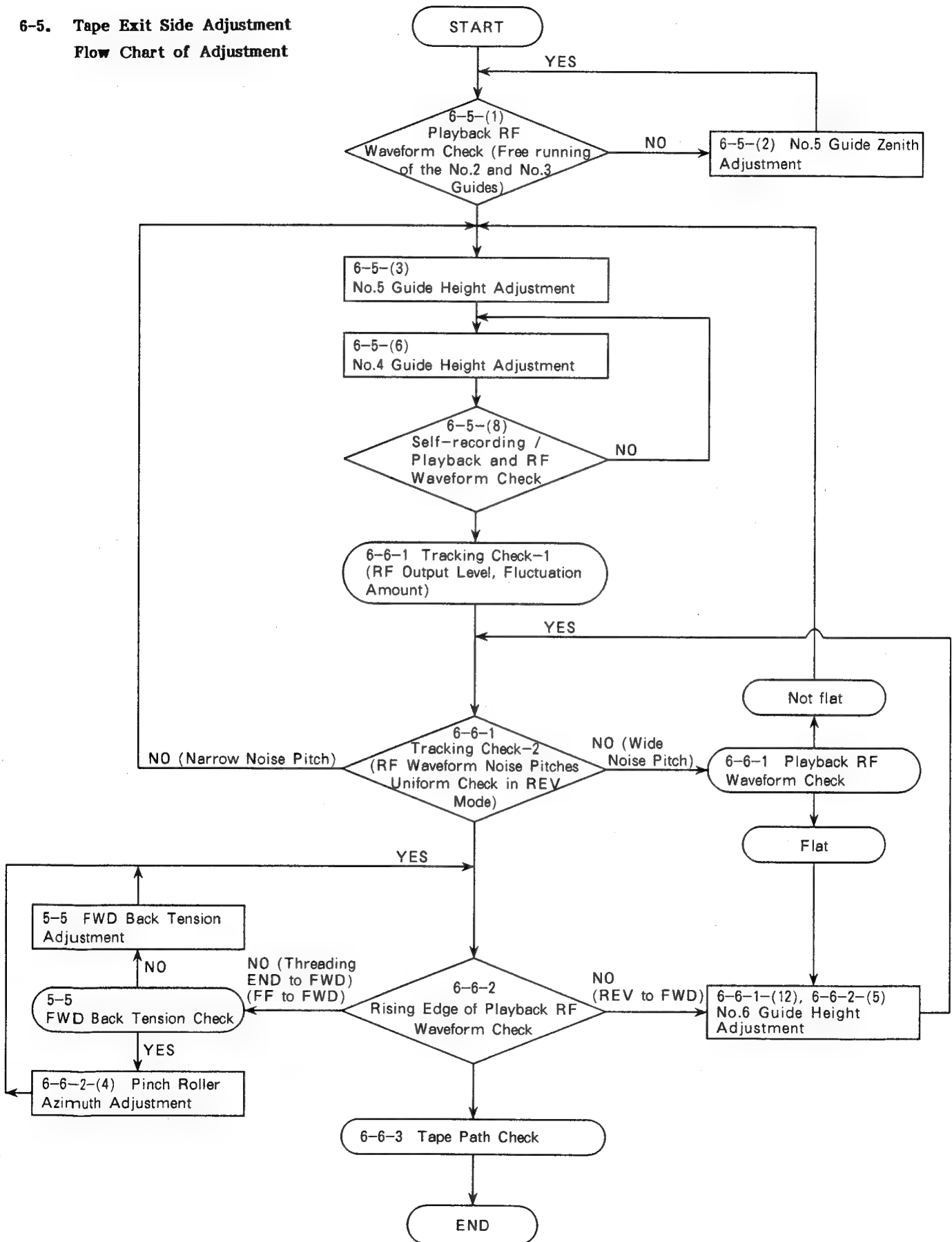


Fig. 8

6-5. Tape Exit Side Adjustment
Flow Chart of Adjustment



Mode: Play back the alignment tape

Tools: Alignment tape for tracking

(WR5-1CP) (Ref. No. J-5)

Oscilloscope

Track Shift Tool (Ref. No. J-14)

RF/SWP connector (Ref. No. J-15)

CTL connector (Ref. No. J-16)

Hexagonal screwdriver (across flat has 0.89 mm) (Ref. No. J-17)

Small adjustment mirror (Ref. No. J-4)

Cassette tape E5-90 (Hi8 ME tape)

Preparation:

- (i) Remove the Top Panel referring to Section 2-1.
- (ii) Open the MB-19 Board referring to Section 2-5-5.
- (iii) Connect the Track Shift Tool and oscilloscope to the unit referring to Section 6-1 and 6-2.
- (iv) Play back the alignment tape.

Procedure:

- (1) Turn the No. 4 and No. 5 Guides counterclockwise to free the tape path at the exit side. (fig. 1)

Note: If the No. 5 Guide nut is not loosen because of locking compound, dissolve locking compound with alcohol. Check that the tape does not touch the lower flange of the No. 5 Guide in free running.

- (2) Check that the RF waveform at the exit side has 2 to 3 peaks in this condition. If not, adjust as follows. (fig. 2)

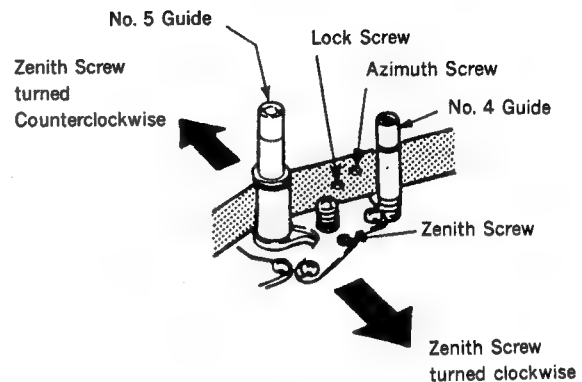


Fig. 1

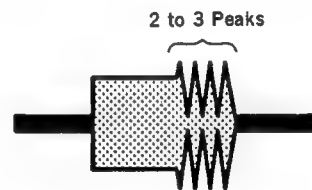


Fig. 2

1. Turn and loosen the lock screw counterclockwise.

less than 2 peaks

2. Turn and adjust slowly the zenith screw clockwise 45 degrees step.

more than 3 peaks

3. Turn and adjust slowly the zenith screw of the No. 5 Guide counterclockwise 45 degrees step.

4. Tighten the lock screw clockwise. (fig. 1)

Note: If tighten the lock screw too much, the waveform will change. Tighten suitably the lock screw. Never turn the azimuth screw of the No. 5 Guide.

- (3) Turn the No. 5 Guide clockwise and flatten the RF waveform at the exit side. (fig. 3)

Note: At this time, the waveform reaction is slow against the nut rotation. After check that the waveform variation is stabilized, turn the nut more.

- (4) Set the SEL switch of the Track Shift Tool to ON. Turn the Track Shift Knob and set the amplitude of the RF waveform to two-third position. (fig. 4)
- (5) Turn the No. 5 Guide and raise the exit side waveform slightly. (fig. 5)
- (6) Turn the No. 4 Guide and flatten the waveform. Then turn the No.4 Guide a little more as shown in the fig.6.
- (7) Eject the alignment tape.
- (8) Perform self-recording/playback with a cassette tape (E5-90) and check the RF waveform.

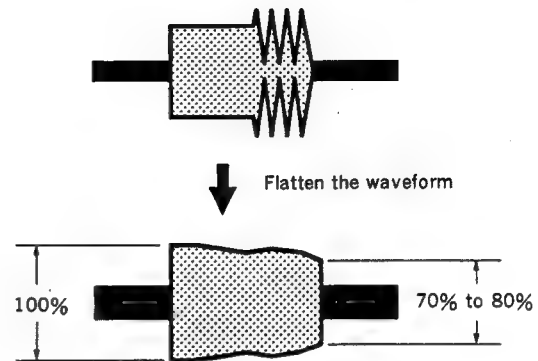


Fig. 3

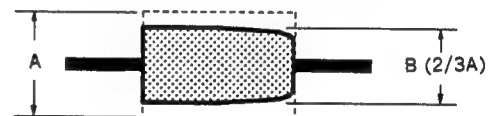
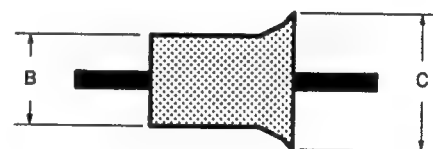


Fig. 4



$$C = 1.15B \text{ to } 1.25B$$

Fig. 5

1. Perform Hi8 Recording with no signal. (Use the cassette tape from tape top to middle.) Check the SP and Hi8 of the indicator section on the front panel are lighting in this mode.
 2. Play back the cassette tape, check that the RF waveform (CH 1 and CH 2) at the exit side meet the specification as shown in the fig.7. If not, adjust the height of No.4 Guide again within the specification as shown in the fig.6. Perform the steps 1 and 2 and check that it meet the specification as shown in the fig.7.
- (9) After adjustment, perform the Check After Adjustment referring to Section 6-6.
 - (10) Smear locking compound to the lock screw, zenith screw and adjustment nuts of No.4 Guide and No.5 Guide.

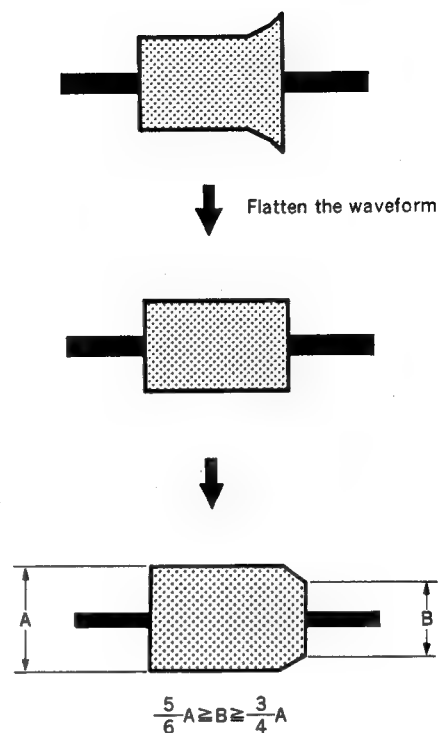


Fig. 6

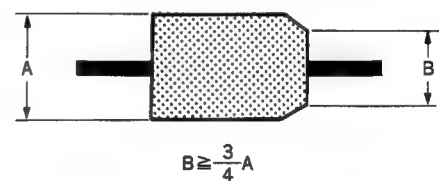


Fig. 7

6-6. CHECK AFTER ADJUSTMENT

Tool: No. 6 Guide Lock Tool (Ref. No. J-10)

Alignment tape for tracking
(WR5-1CP) (Ref. No. J-5)

1. Video Tracking Check

- (1) Play back the alignment tape for tracking.
- (2) Set the SEL switch of the Track Shift Tool to ON. Turn the Track Shift Knob and set the amplitude of the RF waveform to two-third position. (fig. 1)
- (3) In this time, check that the amplitude minimum value (E MIN) of the RF waveform is more than 75% of maximum value (E MAX). (fig. 2)
- (4) In this time, check that the fluctuation amount of the RF waveform at entrance and exit sides meet the required specification as shown in figure. 3.
- (5) Set the SEL switch of the Track Shift Tool to OFF.
- (6) Set to the REV mode and check that the noise pitches of the waveform are uniform. (fig. 4) If not, adjust as follows.

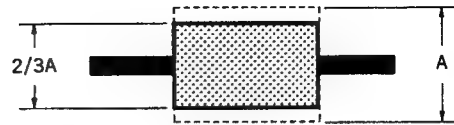


Fig. 1



Fig. 2

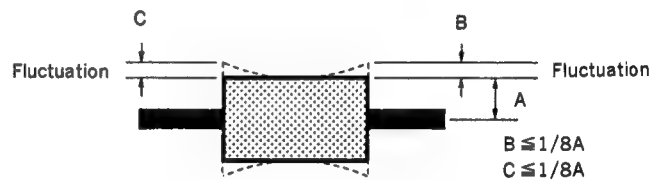
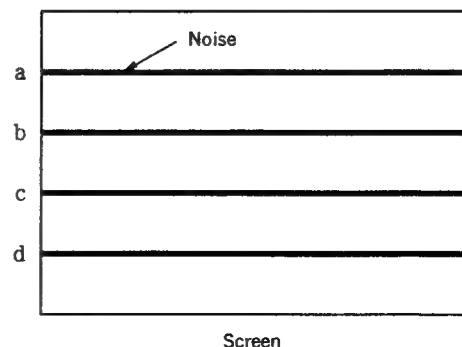
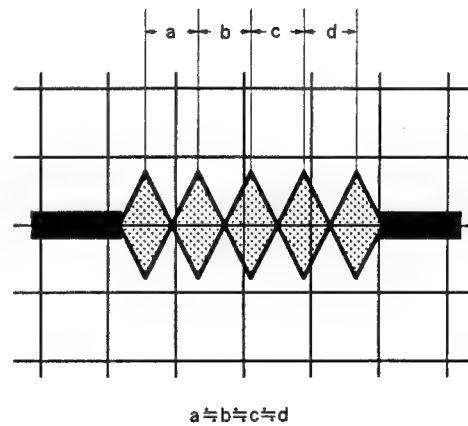


Fig. 3



Screen

Fig. 4

When the noise pitch is narrow at the entrance side (upper of screen). (fig. 5)

(7) Check that the RF waveform is flat in the PLAY mode.

(8) Perform the height adjustment of the No. 1 Guide referring to Section 6-4.

Note: After adjustment, perform the Tracking Check referring to Section 6-6-1.

When the RF waveform is not flat.

(9) Perform the height adjustment of the No. 2 and No. 3 Guides referring to Section 6-4.

Note: After adjustment, perform the Tracking Check referring to Section 6-6-1.

When the noise pitch is narrow at the exit side (lower of screen). (fig. 6)

(10) Set to PLAY mode and perform the height adjustment of the No. 4 and No. 5 Guides referring to Section 6-5. After adjustment, perform the Tracking Check referring to Section 6-6-1 and check that it meet the required specification.

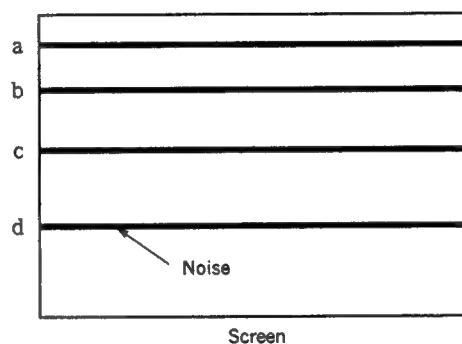
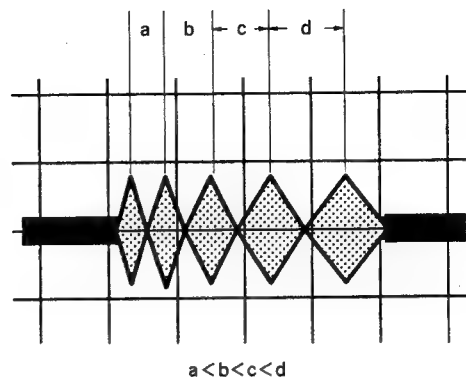


Fig. 5

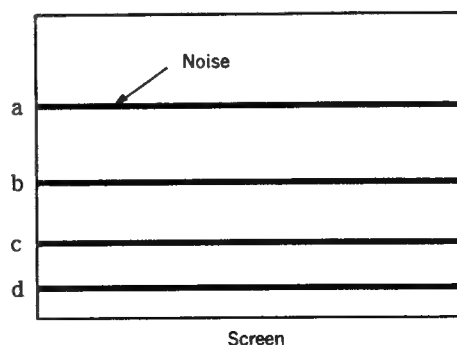
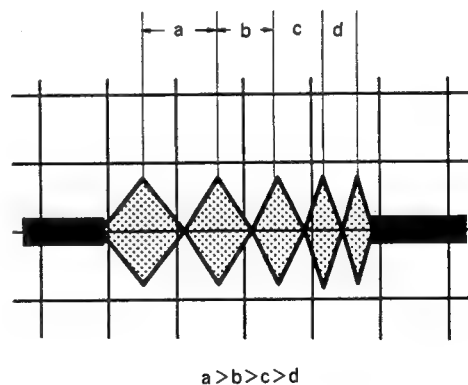


Fig. 6

When the noise pitch is wide at the exit side (lower of screen). (fig. 7)

- (11) Set to PLAY mode and check that the RF waveform is flat.
- (12) Turn and loosen the Guide Lower Gear counterclockwise with the No. 6 guide lock tool. (fig. 8)
- (13) Turn the No. 6 Guide and perform the height adjustment.

Note: At this time, if the No. 6 Guide is raised too much, the wrinkles may occur between the capstan shaft and No. 5 Guide (A portion). Check that the wrinkles are not occur. (fig. 9)

- (14) Turn and *lock the Guide Lower Gear clockwise with the NO. 6 guide lock tool.

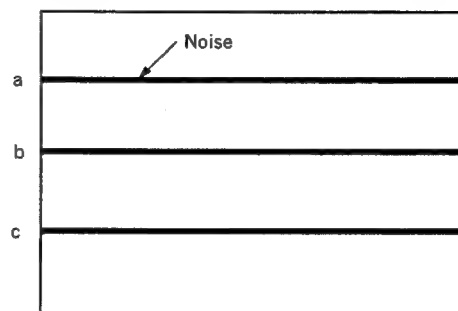
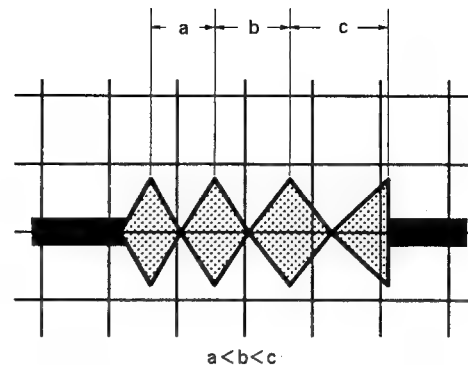
*Touch the Guide Lower Gear against the lower flange of the No. 6 Guide and turn it more about 10 degrees.

Note: After adjustment, perform the Tracking Check referring to Section 6-6-1.

When the waveform is not flat.

- (15) Perform the height adjustment of the No. 4 and No. 5 Guides referring to Section 6-5.

Note: After adjustment, perform the Tracking Check referring to Section 6-6-1.



Screen

Fig. 7

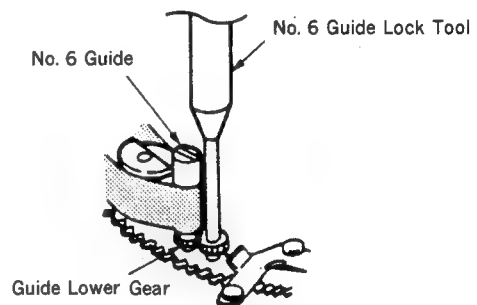


Fig. 8

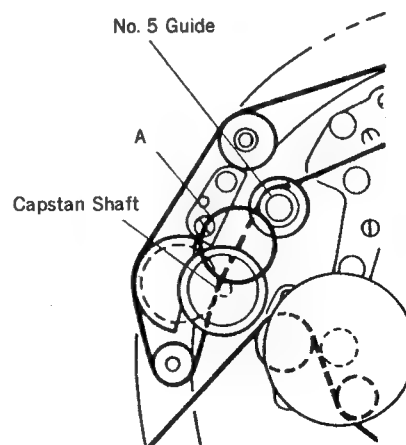


Fig. 9

2. Rising Edge of Waveform Check

- (1) Check that the RF waveform rises horizontally (flat waveform) in playback after threading is completed, playback after CUE/REV or FF mode. If the RF waveform do not rise horizontally, adjust as follows.

After threading is completed, when the noise occurs at the playback rising edge at the exit side. (lower of screen) (fig. 11).

- (2) Check the FWD Back Tension.

When the FWD Back Tension is too low.

- (3) Adjust again FWD Back Tension Adjustment referring to Section 5-5.

When the FWD Back Tension is normal.

- (4) while adjusting the playback rising edge, turn the azimuth screw of the Pinch Roller clockwise about 5 degrees step. (fig.12)

After REV mode, when the noise occurs at the playback rising edge at the exit side. (lower screen)(fig. 11)

- (5) Turn and loosen the Guide Lower Gear counterclockwise with No. 6 Guide Lock Tool. (fig. 8)
- (6) Turn the No. 6 Guide and perform the height adjustment.

Note: At this time, if the No. 6 Guide is raised too much, the wrinkles may occur between the capstan shaft and No. 5 Guide (A portion). Check that the wrinkles are not occur. (fig. 9)

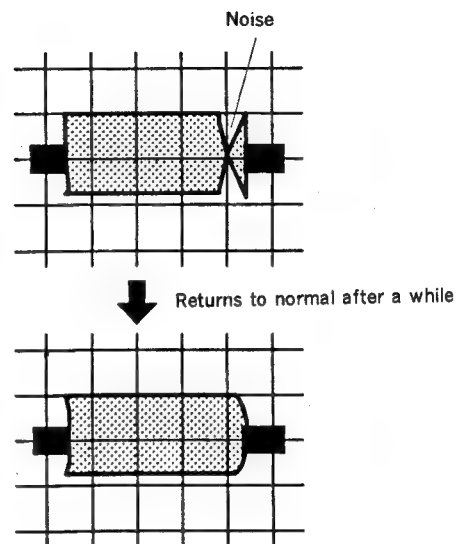


Fig. 11

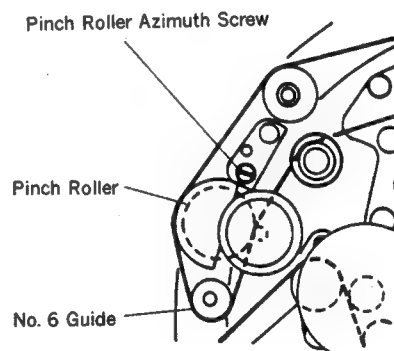


Fig. 12

After FF mode, when the noise occurs at the playback rising edge at the exit side.
(lower of screen)(fig. 11)

(7) Check that the FWD Back Tension.

When the FWD Back Tension is too low.

(8) Adjust again FWD Back Tension

Adjustment referring to Section 5-5

When the FWD Back Tension is normal.

(9) While adjusting the playback rising edge, turn the azimuth screw of the Pinch Roller clockwise about 5 degrees step. (fig. 12)

Note: After adjustment, be sure to check the playback rising edge after threading is completed.

3. Tape Running Check

Check the tape running at the flange of the Guides (shown by arrows) in PLAY and REV modes.

No.1, No.2, No.3. No.5 Guides:

... Tape runs in contact with upper or lower flange. Less than 0.3 mm tape curl is acceptable.

No.6 Guide:

... Tape runs in contact with lower flange without curl.

No.4 Guide:

... Tape runs in contact with upper flange. Less than 0.5 mm tape curl is acceptable.

NOTE: After checking, smear locking compound these points.

- . No.1 Guide height adjustment screw
- . No.5 Guide lock screw and zenith screw
- . adjustment nut of No.3 Guide
- . adjustment nut of No.4 Guide
- . adjustment nut of No.5 Guide

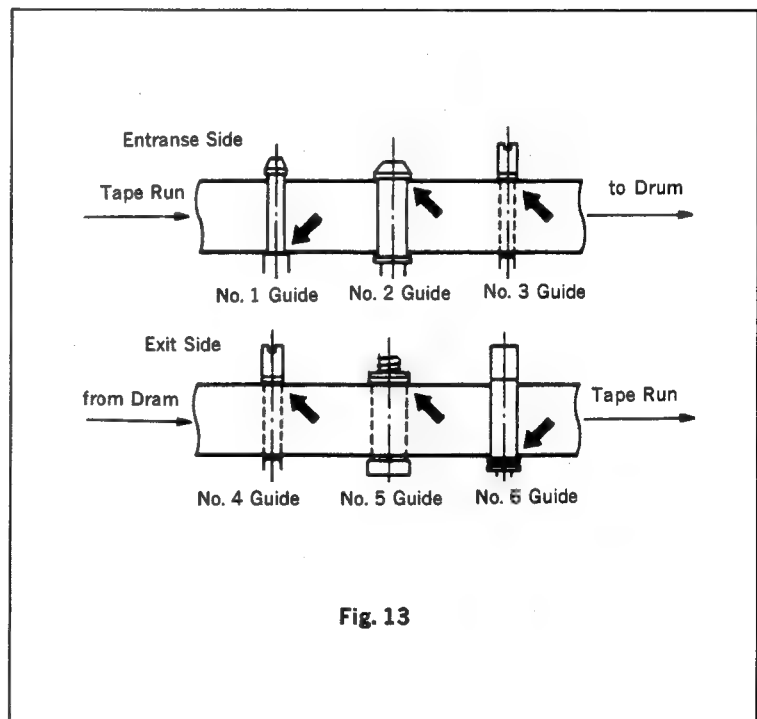


Fig. 13

SECTION 7 POWER SUPPLY AND SYSTEM CONTROL ALIGNMENT

[Equipment Required]

- Digital voltmeter

7-1. +5V ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• E-E mode	TP3/DC-45A (C-1) 5.14±0.05V	RV1/DC-45A (F-1)

7-2. RF DET LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
• E-E mode	TP4/DI-12 (L-3) Value of this time is A	
	TP3/DI-12 (L-3) A=0.1±0.01Vdc	RV403/DI-12 (L-3)

SECTION 8 SERVO SYSTEM ALIGNMENT

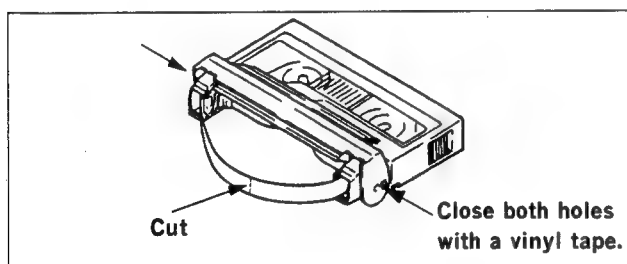
[Equipment Required]

- Oscilloscope
- Frequency counter
- Digital voltmeter
- Alignment tape

Name (Part No.)	REC mode	Tape Type	Tape Speed	Contents	
				Video Area	PCM Area
Switching position WR2-3CS (8-967-992-17)	STD	MP	SP	CH-1: 3MHz CH-2: 3MHz Marker Width: $100 \pm 10 \mu\text{sec}$.	
SP operation check WR5-8CSE (8-967-995-48)	Hi8	ME	SP	VIDEO SIGNAL Color-bar 4 min. Monoscope 4 min. AUDIO SIGNAL (AFM) 400 Hz 60% mod.	AUDIO SIGNAL (PCM) 400 Hz 20 min.
LP operation check WR5-8CLE (8-967-995-57)	Hi8	ME	LP	VIDEO SIGNAL Color-bar 4 min. Monoscope 4 min. AUDIO SIGNAL (AFM) 400 Hz 60% mod.	AUDIO SIGNAL (PCM) 400 Hz 40 min.

- Empty cassette (See below.)

1. Draw out a tape and cut it.
2. Cover two holes on both side of the cassette with a vinyl tape.



8-1. CAPSTAN FG DUTY ADJUSTMENT

Remove the Bottom Plate and open the HK-5 Board for this adjustment. If it does not meet the specification, remove the mechanical deck and adjust again.

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Connect each TP001 AND TP002 on the SE-10P board to ground with jumper wires. • Insert the empty cassette tape and put the machine into the play back mode. • After adjustment, remove the jumper wires. 	<p>TP105/SE-10P (D-4)</p> <p style="text-align: center;">$A \approx B$</p>	<p>RV801/MD-23P (D-3)</p>

8-2. REEL FG ADJUSTMENT

Remove the mechanical deck for this adjustment.

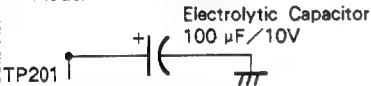
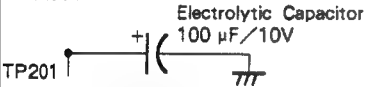
Connect only CN907 on the SE-10P Board.

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none">• Play back the alignment tape WR5-8CLE.	TP901/MD-23P (G-1) 21±1Hz	RV901/MD-23P (G-1)
<ul style="list-style-type: none">• Perform confirmation while playing back the alignment tape WR5-8CLE.	TP902/MD-23P (E-1) 1.0 through 1.4Vdc	
<ul style="list-style-type: none">• Perform confirmation while playing back the alignment tape WR5-8CLE with CUE (×9) mode. CUE (×9) : While pressing the PB button, press the FF button on the MB-19 Board.• After adjustment, install the mechanical deck.	TP901/MD-23P (G-1) 37 through 50 Hz TP902/MD-23P (E-1) 1.4 through 1.9Vdc	

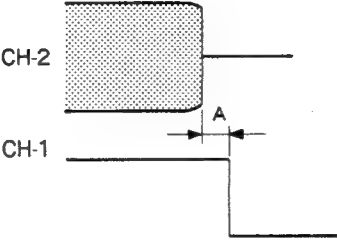
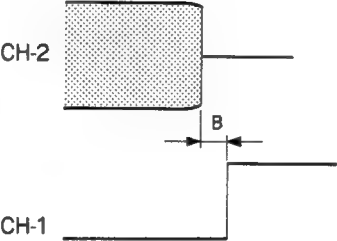
8-3. DRUM FREE SPEED ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none">• VIDEO IN : No signal• Use the Hi8 ME tape.• REC mode	TP101/SE-10P (D-6) 1.9±0.1Vdc	RV102/SE-10P (E-6)

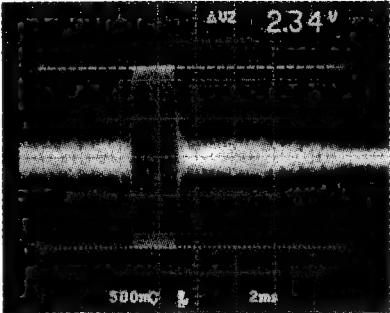
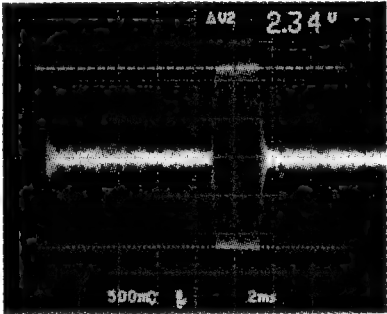
8-4. CAPSTAN FREE SPEED ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<p>Step 1</p> <ul style="list-style-type: none"> Connect TP201/SE-10P (H-3) to ground with electrolytic capacitor (100 μF/10V) during STOP mode.  <ul style="list-style-type: none"> Connect TP002/SE-10P (D-6) to ground with jumper wire during STOP mode. Play back the alignment tape WR5-8CSE. After adjustment, remove the jumper wire and capacitor. 	<p>TP105/SE-10P (D-4)</p> <p>1341\pm1 Hz</p>	<p>RV106/SE-10P (D-5)</p>
<p>Step 2</p> <ul style="list-style-type: none"> Connect TP201/SE-10P (H-3) to ground with electrolytic capacitor (100 μF/10V) during STOP mode.  <ul style="list-style-type: none"> Connect TP002/SE-10P (D-6) to ground with jumper wire during STOP mode. Connect pin 4 of CN901/SE-10P (A-5) to ground with jumper wire during STOP mode. Play back the alignment tape WR5-8CSE. After adjustment, remove the jumper wire and capacitor. 	<p>TP105/SE-10P (D-4)</p> <p>670\pm1 Hz</p>	<p>RV105/SE-10P (D-5)</p>

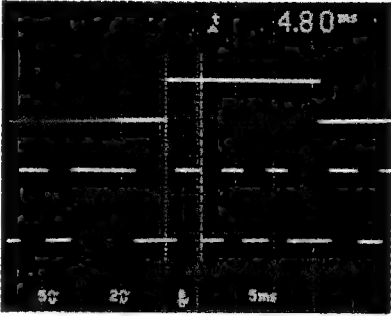
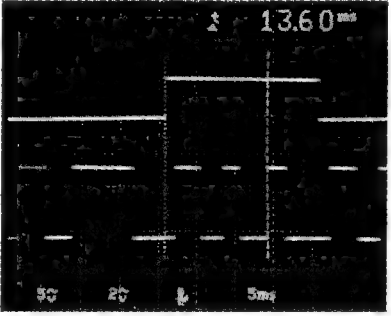
8-5. SWITCHING POSITION ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<div>• Play back the alignment tape WR2-3CS.</div>	<div>CH-1 : TP061/FR-43 (B-2) CH-2 : CN004-4/FR-43 (A-2)</div> <div><p>A</p><p>$A=0\pm10\mu\text{sec}$</p></div>	<div>●RV101/SE-10P (C-6)</div> <div>Trigger: TP061/FR-43 (B-2)</div>
	<div>CH-1 : TP061/FR-43 (B-2) CH-2 : CN004-3/FR-43 (A-2)</div> <div><p>B</p><p>$B=0\pm10\mu\text{sec}$</p></div>	<div>Trigger: TP061/FR-43 (B-2)</div>

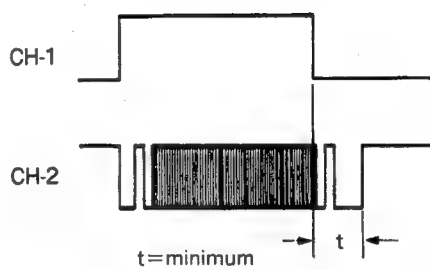
8-6. ATF BPF BALANCE ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none">• Connect TP208/SE-10P (H-3) to ground with jumper wire.• VIDEO IN: color-bar signal• Perform the self-recording /play back with a Hi8 ME tape.• After adjustment, remove the jumper wire.	<p>IC201-12/SE-10P (G-4)</p>  <p>47kHz</p> <p>IC201-11/SE-10P (G-4)</p>  <p>16kHz</p> <p>A=B</p>	<p>RV201/SE-10P (G-4)</p> <p>Trigger: TP103/SE-10P (F-3)</p>

8-7. STILL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • Perform the self-recording/play back with a Hi8 ME tape. • JOG mode • Turn the Search Dial in the FWD direction and narrow the pulse width of A. 	CH-1: TP103/SE-10P (F-3) CH-2: TP204/SE-10P (F-5)  $4.8 \pm 0.1 \text{ msec}$	RV203/SE-10P (H-3) Trigger: TP103/SE-10P (F-3)
	CH-1: TP103/SE-10P (F-3) CH-2: TP204/SE-10P (F-5)  $13.6 \pm 0.1 \text{ msec}$	RV204/SE-10P (H-3) Trigger: TP103/SE-10P (F-3)

8-8. SP SLOW ADJUSTMENT

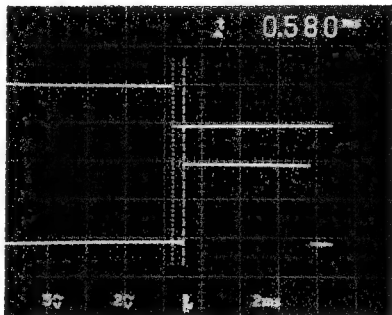

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • Using P5-MP series tape, perform the short recording of the color-bar signal at the end of tape. • Connect TP001/SE-10P (C-2) to ground with jumper wire. • Connect the counter to TP1/DI-12 (L-4). • Put the unit into the SHUTTLE mode and turn the Search Dial in the FWD direction so that the frequency is about 192 Hz. Play back the recorded portion. (It corresponds to one-fifth time speed.) • After adjustment, remove the jumper wire. 	<p>CH-1: TP103/SE-10P (F-3) CH-2: TP105/SE-10P (D-4)</p>  <p>When the noise appears on the monitor screen, adjust RV104 so that the noise at the bottom of the screen disappears.</p>	<ul style="list-style-type: none"> ● RV304/SE-10P (E-2) ● RV104/SE-10P (D-5) <p>Trigger: TP302/SE-10P (F-3)</p>

8-9. LP SLOW ADJUSTMENT

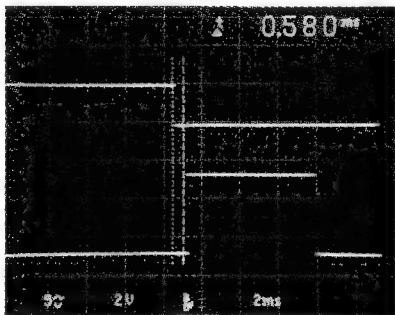
Note: This adjustment should be performed after completion of "8-8. SP SLOW ADJUSTMENT".

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Connect pin 4 of CN901/SE-10P (A-5) to ground with jumper wire. • VIDEO IN: color-bar signal • Perform the a short recording of the color-bar signal at the end of P5-MP series tape. • Connect TP001/SE-10P (C-2) to ground with jumper wire. • Connect the counter to TP1/DI-12 (L-4). • Put the unit into the SHUTTLE mode and turn the Search Dial in the FWD direction so that the frequency is about 192 Hz. Play back the recorded portion. (It corresponds to one-fifth time speed.) • After adjustment, remove jumper wires. 	<p>When the noise appears on the monitor screen, adjust RV103 so that the noise at the bottom of the screen disappears.</p>	<ul style="list-style-type: none"> ● RV103/SE-10P (E-5)

8-10. SP SLOW fH ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
Step 1 <ul style="list-style-type: none"> Perform the short recording of the color-bar signal with a Hi8 ME tape. Connect the counter to TP1/ DI-12 (L-4). Put the unit into the SHUTTLE mode and turn the Search Dial in the FWD direction so that the frequency is about 32 Hz. Play back the recorded portion. (It corresponds to one-thirtieth time speed.) 	CH-1: TP103/SE-10P (F-3) CH-2: TP102/SE-10P (D-5)  $580 \pm 10 \mu\text{sec}$	RV301/SE-10P (F-1)
Step 2 <ul style="list-style-type: none"> Perform the short recording of the color-bar signal with a Hi8 ME tape. Connect the counter to TP1/ DI-12 (L-4). Put the unit into the SHUTTLE mode and turn the Search Dial in the FWD direction so that the frequency is about 192 Hz. Play back the recorded portion. (It corresponds to one-fifth time speed.) 	TP301/SE-10P (E-2)  $V = 1.5 \pm 0.1 \text{Vdc}$	RV303/SE-10P (E-1)

8-11. LP SLOW fH ADJUSTMENT

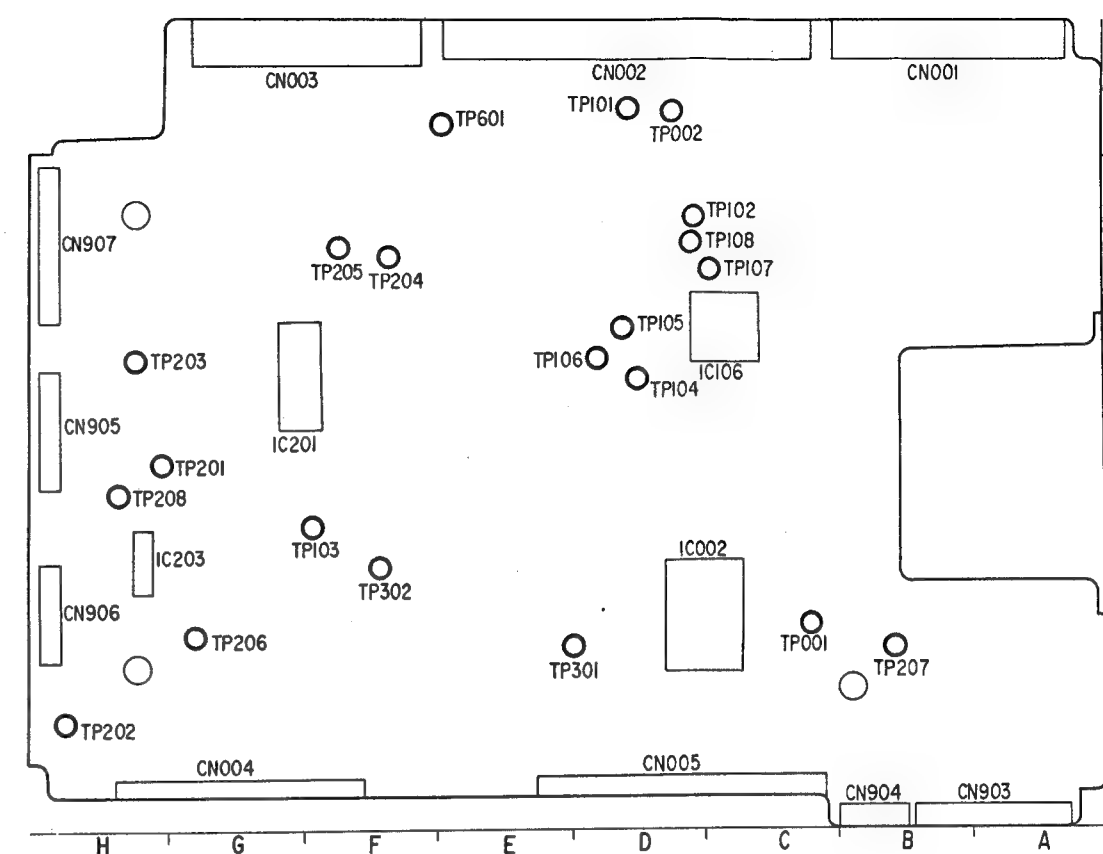
Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Connect pin 4 of CN901/SE-10P (A-5) to GND with jumper wire. Perform the short recording of the color-bar signal with a Hi8 ME tape. Connect the counter to TP1/ DI-12 (L-4). Put the unit into the SHUTTLE mode and turn the Search Dial in the FWD direction so that the frequency is about 192 Hz. Play back the recorded portion. (It corresponds to one-fifth time speed.) 	CH-1: TP103/SE-10P (F-3) CH-2: TP102/SE-10P (D-5)  $580 \pm 10 \mu\text{sec}$	RV302/SE-10P (F-2)

8-12. CAPSTAN FG ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the alignment tape WR5-8CSE. 	<p>CH-1: TP1/DI-12 (L-4) CH-2: TP2/DI-12 (L-3)</p> <p>CH-1</p> <p>CH-2</p> <p>50% 50% 200μs</p> <p>A B</p>	<p>CH-1 RV401/DI-12 (M-3)</p> <p>CH-2 RV402/DI-12 (K-3)</p>

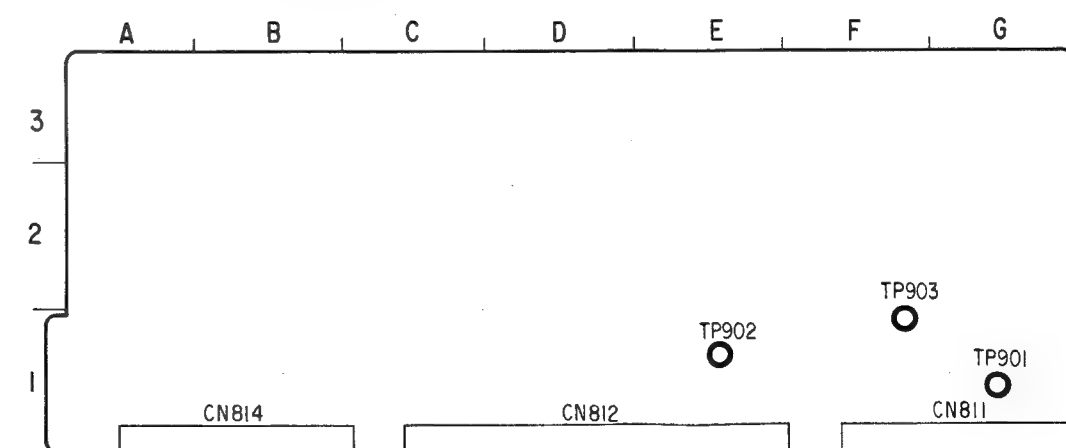
When the TP1 signal is rising-up, TP2 is Low level.

Location of TPs on the SE-10P Board.

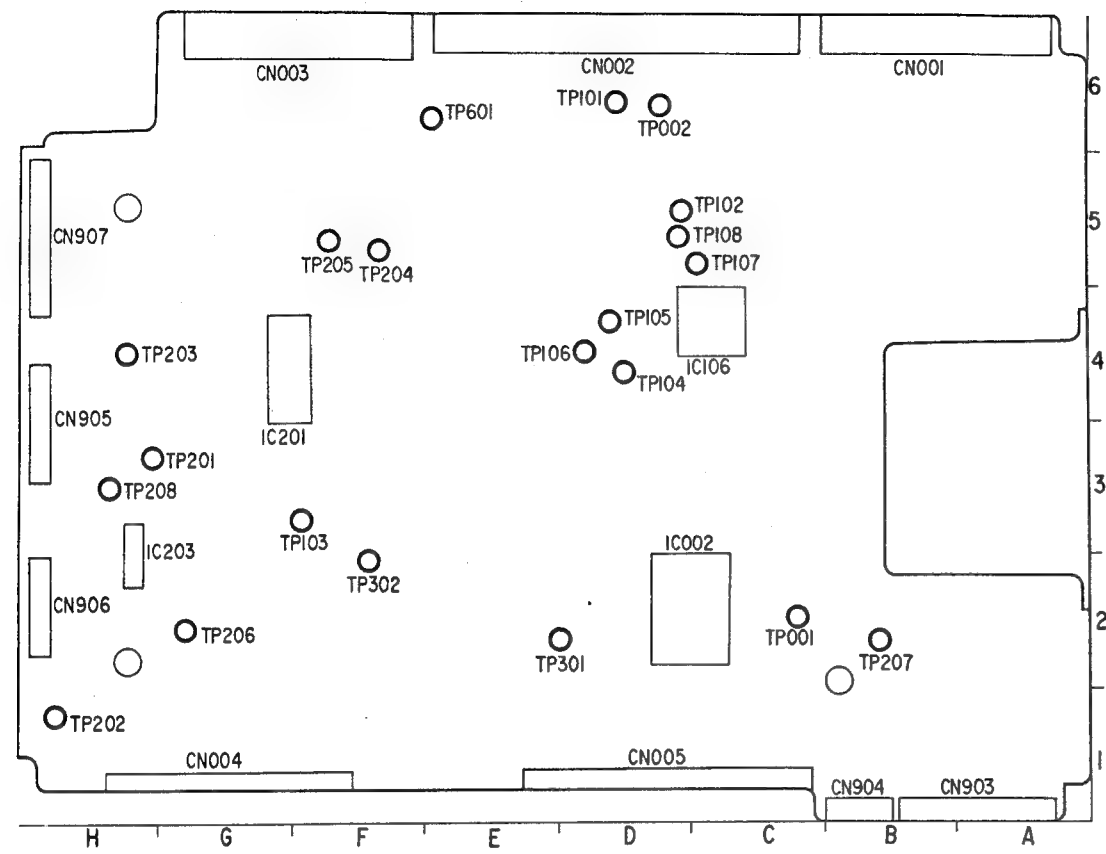


Place the unit on its right side down. Remove the Bottom Plate and Core Shield Plate. Open the HK-5 Board.

Location of TPs on the MD-23P Board.

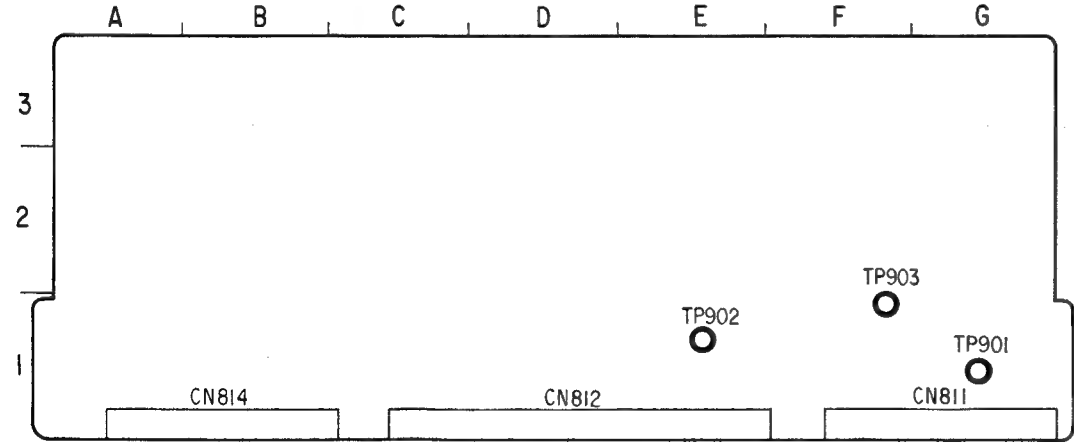


Location of TPs on the SE-10P Board.

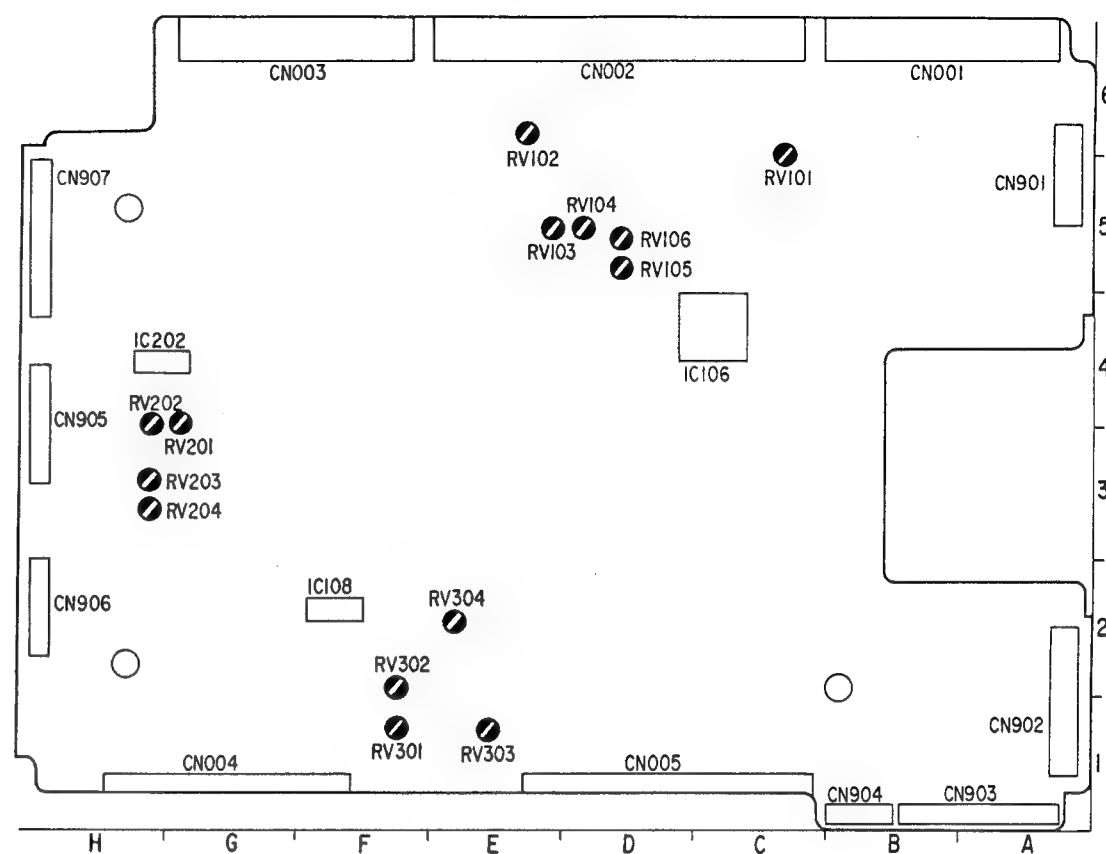


Place the unit on its right side down. Remove the Bottom Plate and Core Shield Plate. Open the HK-5 Board.

Location of TPs on the MD-23P Board.

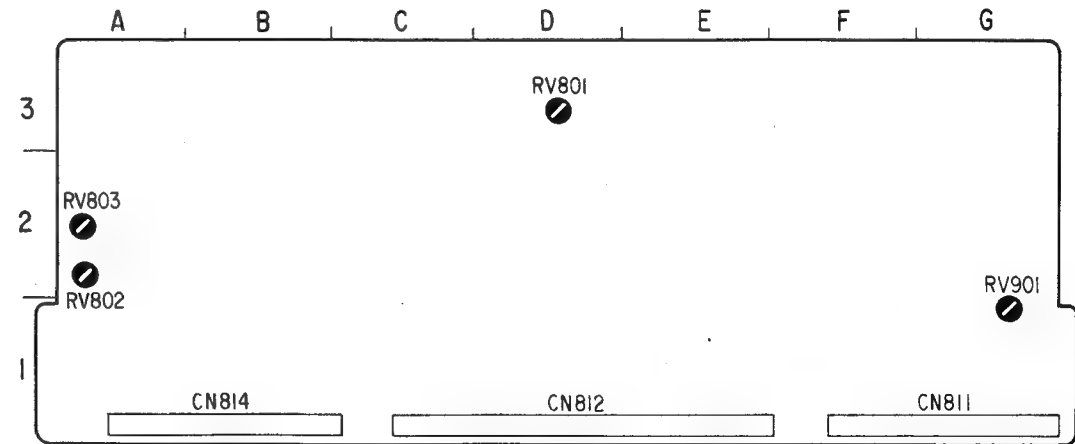


Location of RVs on the SE-10P Board.



Place the unit on its right side down. Remove the Bottom Plate and Core Shield Plate. Open the HK-5 Board.

Location of RVs on the MD-23P Board.



Adjust RVs from the soldering side holes. (It is unnecessary to remove the MD-23P Board from the mechanical deck.)

SECTION 9 AUDIO SIGNAL SYSTEM ALIGNMENT

[Equipment Required]

- Oscilloscope
- Frequency counter
- Audio signal generator
- Audio level meter
- Digital voltmeter
- Alignment tape

Name (Part No.)	REC mode	Tape Type	Tape Speed	Contents	
				Video Area	PCM Area
SP operation check WR5-8CSE (8-967-995-48)	Hi8	ME	SP	VIDEO SIGNAL Color-bar 4 min. Monoscope 4 min. AUDIO SIGNAL (AFM) 400 Hz 60% mod.	AUDIO SIGNAL (PCM) 400 Hz 20 min.

9-1. PCM MASTER CLOCK ADJUSTMENT

Note: Before adjustment, remove the PA-27 board.

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Connect pin 14 of IC853/PD-19 (A-1) and pin 11 of CN852/PD-19 (A-2) with jumper wire. • E-E mode • After the adjustment, remove jumper wire. 	IC853-8/PD-19 (A-1) $11.45 \pm 0.01 \text{ MHz}$	① RV851/PD-19 (A-2)

9-2. PCM PLAYBACK VCO FREE-FREQUENCY ADJUSTMENT

Note: Before adjustment, remove the PA-27 board.

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Connect pin 9 of CN851/PD-19 (B-1) and pin 11 of CN852/PD-19 (C-3) with jumper wire. • Connect pins 7 and 8 of CN852/PD-19 (C-3) with jumper wire. • E-E mode • After the adjustment, remove jumper wires. 	IC854-8/PD-19 (A-2) $11.58 \pm 0.05 \text{ MHz}$	① RV854/PD-19 (A-2)

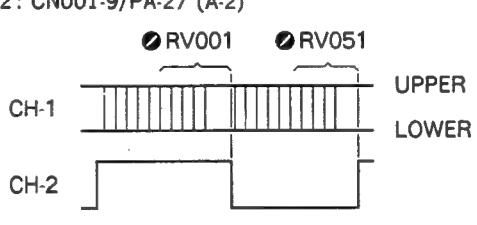
9-3. D/A CONVERTER LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the Audio 400 Hz portion of the alignment tape WR5-8CSE. 	CN001-16/PA-27 (A-2) -4.0 ± 0.2 dBs	⚙ RV032/PA-27 (A-1)

9-4. NR DECODE LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the Audio 400 Hz portion of the alignment tape WR5-8CSE. 	CN001-20/PA-27 (A-3) -14.0 ± 0.5 dBs <ul style="list-style-type: none"> If adjustment value doesn't meet the specification, change the value of resistors as follows and perform adjustment again. R062 12k \rightarrow 13k R012 12k \rightarrow 13k	⚙ RV031/PA-27 (C-1)

9-5. A/D CONVERTER OFFSET ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Connect pin 8 of CN001/PA-27 (A-2) to pin 17 of CN001/PA-27 (A-2) with jumper wire. Connect pins 15 and 18 of CN001 with jumper wire. Connect pins 4 and 5 of CN001 with jumper wire. REC mode (no signal input) After adjustment, remove jumper wires. 	CH-1: CN001-11/PA-27 (A-2) CH-2: CN001-9/PA-27 (A-2)  Adjust upper and lower brightnesses for the same.	L-CH ⚙ RV001/PA-27 (B-2) R-CH ⚙ RV051/PA-27 (B-1)

9-6. PCM REC LEVEL ADJUSTMENT

Note: This adjustment should be performed after completion of 9-4. NR DECODED LEVEL ADJUSTMENT.

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> AUDIO LINE IN: 400Hz/−10dB Preform the self-recording/play back with a Hi8 ME tape. 	L-CH: CN001-20/PA-27 (A-3) -13.5 ± 0.1 dB	L-CH ⚙ RV002/PA-27 (B-3)
	R-CH: CN001-1/PA-27 (A-1) -13.5 ± 0.1 dB	R-CH ⚙ RV052/PA-27 (B-1)

9-7. PCM PB LINE OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • OUTPUT SELECT: PCM • Play back the 400 Hz portion of the alignment tape WR5-8CSE. 	CH-1 AUDIO OUT connector (terminated with 600Ω) 4.0 ± 0.3 dBm	CH-1 ⚙ RV301/AU-127 (J-4)
	CH-2 AUDIO OUT connector (terminated with 600Ω) 4.0 ± 0.3 dBm	CH-2 ⚙ RV302/AU-127 (K-4)

9-8. AFM PB LINE OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • OUTPUT SELECT: AFM • Play back the 400 Hz portion of the alignment tape WR5-8CSE. 	CH-1 AUDIO OUT connector (terminated with 600Ω) 4.0 ± 0.3 dBm	⚙ RV351/AU-127 (D-3)

9-9. E-E LEVEL ADJUSTMENT

Note: The AUDIO LEVEL control should not be touch until rest Section 9 Audio Signal System Alignment.

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • AUDIO LINE IN: 400 Hz/+4 dBs • AFM INPUT SELECT: CH-1 • OUTPUT SELECT: PCM • AUDIO LIMITER: OFF • Play back the Hi8 ME tape. • STOP mode 	CH-1: TP102/AU-127 (G-3) CH-2: TP202/AU-127 (G-2) $CH-1, CH-2 = -12 \pm 0.3$ dBm	CH-1 ⚙ CH-1 AUDIO LEVEL/ Front Panel CH-2 ⚙ CH-2 AUDIO LEVEL/ Front Panel

9-10. E-E PB LINE OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • AUDIO LINE IN: 400 Hz/+4 dBs • OUTPUT SELECT: PCM • E-E mode 	CH-1 AUDIO OUT connector (terminated with 600Ω) 4.0 ± 0.3 dBm	CH-1 ⚙ RV401/AU-127 (F-3)
	CH-2 AUDIO OUT connector (terminated with 600Ω) 4.0 ± 0.3 dBm	CH-2 ⚙ RV501/AU-127 (F-2)

9-11. AUDIO LEVEL METER ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> AUDIO LINE IN: 400 Hz/+4 dBs OUTPUT SELECT: PCM E-E mode 	CH-1 AUDIO LEVEL METER $0 \pm 0.5 \text{ dB}$	CH-1 ⚙ RV601/AU-127 (A-3)
	CH-2 AUDIO LEVEL METER $0 \pm 0.5 \text{ dB}$	CH-2 ⚙ RV701/AU-127 (A-3)

9-12. MIC INPUT LEVEL ADJUSTMENT (CH-1)

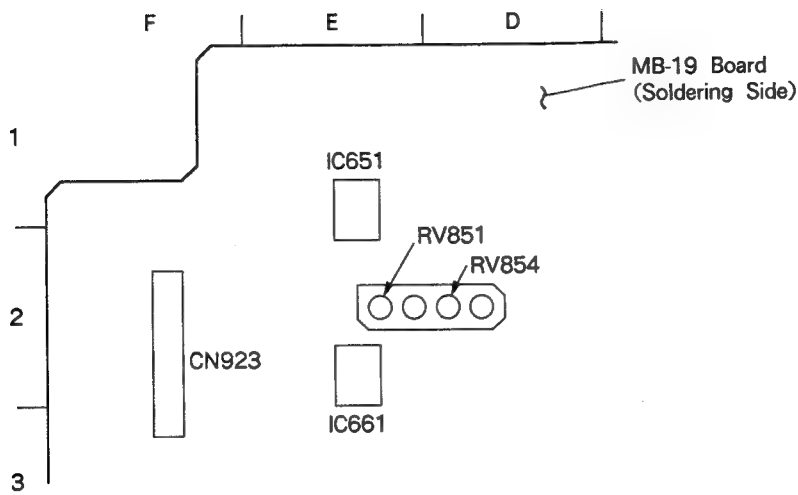
Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> OUTPUT SELECT: PCM Play back the Hi8 ME tape. STOP mode 		
Step 1 <ul style="list-style-type: none"> MIC IN: 400 Hz/−60 dBs AUDIO LIMITER: OFF 	TP102/AU-127 (G-3) $A = -12 \pm 1 \text{ dBm}$	
Step 2 <ul style="list-style-type: none"> MIC IN: 400 Hz/−30 dBs AUDIO LIMITER: ON 	TP102/AU-127 (G-3) $(A + 3.5) + 1 \text{ dBm}$	⚙ RV101/AU-127 (G-4)

9-13. MIC INPUT LEVEL ADJUSTMENT (CH-2)

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> OUTPUT SELECT: PCM Play back the Hi8 ME tape. STOP mode 		
Step 1 <ul style="list-style-type: none"> MIC IN: 400 Hz/−60 dBs AUDIO LIMITER: OFF 	TP202/AU-127 (G-2) $A = -12 \pm 1 \text{ dBm}$	
Step 2 <ul style="list-style-type: none"> MIC IN: 400 Hz/−30 dBs AUDIO LIMITER: ON 	TP202/AU-127 (G-2) $(A + 3.5) \pm 1 \text{ dBm}$	⚙ RV201/AU-127 (H-2)

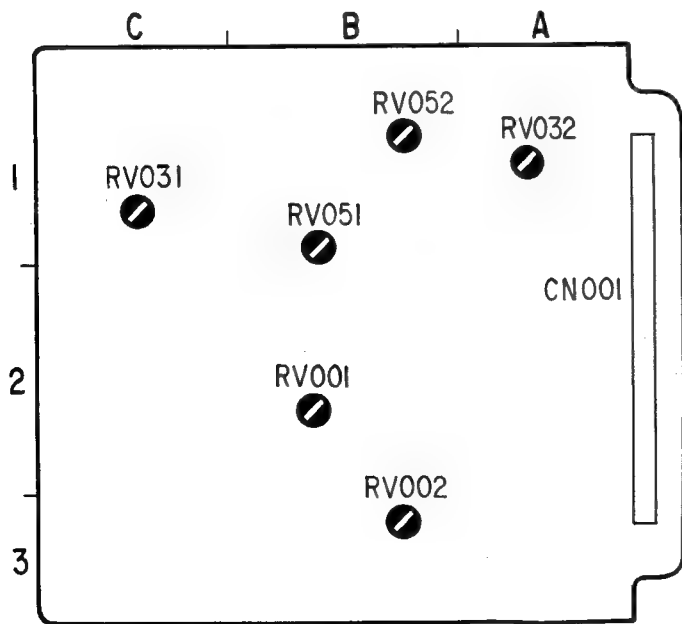
Location of RVs on the PD-19 Board.

Adjust RV851 and RV854 on the PD-19 Board from the soldering side holes of MB-19 Board.



Location of RVs on the PA-27 Board.

Open the MB-19 Board and remove the shield case lid. Adjust RVs from the soldering side holes. (It is unnecessary to remove the PA-27 Board from the mechanical deck.)



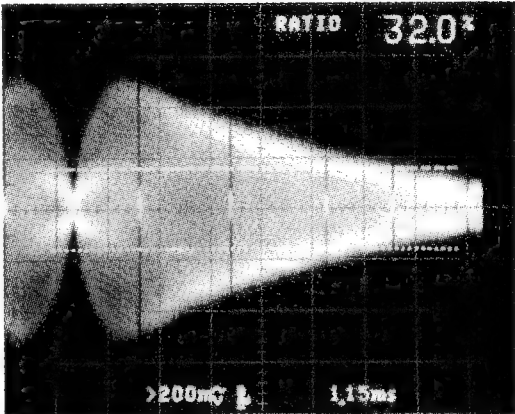
SECTION 10 VIDEO SIGNAL SYSTEM ALIGNMENT

[Equipment Required]

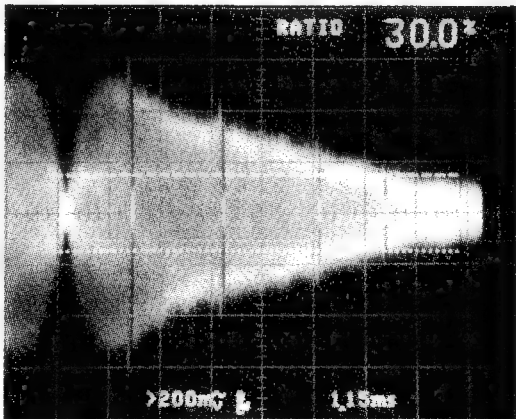
- Oscilloscope
- Frequency counter
- Test signal generator
- Vectorscope
- Vectorscope
- Sweep generator

Name (Part No.)	REC mode	Tape Type	Tape Speed	Contents	
				Video Area	PCM Area
Video freq. resp. WR5-7CE (8-967-995-18)	Hi8	ME	SP	RF sweep 0 to 15 MHz Marker: 2.0 MHz 4.5 MHz 7.0 MHz 8.5 MHz 10.0 MHz	
SP operation check WR5-5CSP (8-967-995-47)	STD	MP	SP	VIDEO SIGNAL Color-bar 4 min. Monoscope 4 min. AUDIO SIGNAL (AFM) 400 Hz 60% mod.	AUDIO SIGNAL (PCM) Monoscope Section 20 Hz 20 sec. 400 Hz 20 sec. 14 kHz 20 sec. Color-Bar Section 1 kHz 4 min.
SP operation check WR5-8CSE (8-967-995-48)	Hi8	ME	SP		AUDIO SIGNAL (PCM) 400 Hz 20 min.
LP operation check WR5-8CLE (8-967-995-57)	Hi8	ME	LP	VIDEO SIGNAL Color-bar 4 min. Monoscope 4 min. AUDIO SIGNAL (AFM) 400 Hz 60% mod.	AUDIO SIGNAL (PCM) 400 Hz 40 min.

10-1. SP PB FREQUENCY RESPONSE ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the alignment tape WR5-7CE. 	TP031/FR-43 (C-2)  $8.5 \text{ MHz} = 32 \pm 4\%$ (in reference to 2 MHz)	CH-1 adjust ⚙ RV004/RP-103 Trigger: TP061/FR-43 (B-2) L level: CH-1
	TP031/FR-43 (C-2) $8.5 \text{ MHz} = 32 \pm 4\%$ (in reference to 2 MHz)	CH-2 adjust ⚙ RV003/RP-103 Trigger: TP061/FR-43 (B-2) H level: CH-2

10-2. LP PB FREQUENCY RESPONSE ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Connect TP104/SE-10P (D-4) to ground with jumper wire. Play back the alignment tape WR5-7CE. After adjustment, remove a jumper wire. 	TP031/FR-43 (C-2)  $8.5 \text{ MHz} = 30 \pm 4\%$ (in reference to 2 MHz)	CH-1 adjust ⚙ RV004/RP-73 (LP) Trigger: TP061/FR-43 (B-2) L level: CH-1
	TP031/FR-43 (C-2) $8.5 \text{ MHz} = 30 \pm 4\%$ (in reference to 2 MHz)	⚙ RV003/RP-73 (LP) Trigger: TP061/FR-43 (B-2) H level: CH-2

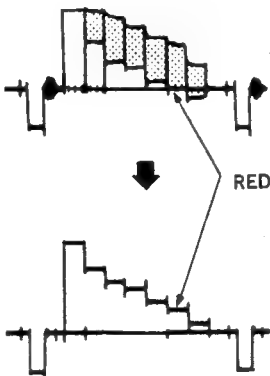
10-3. FLYING ERASE CONFIRMATION

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • Use a Hi8 ME tape. • REC mode 	TP041/FR-43 (C-1) $8.0 \pm 0.5 \text{ MHz}$	

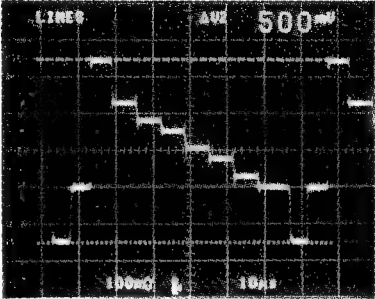
10-4. SUBCARRIER FREQUENCY ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • DIGITAL CNR SW: AUTO • VIDEO IN: no signal • PB mode 	CN914-7/HK-5 (H-3) $4433618 \pm 5 \text{ Hz}$	① CV601/HK-5 (B-4)

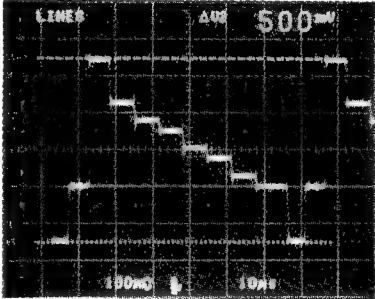
10-5. PB C COMB FILTER ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Supply the composite color-bar signal ($Y=0.5 \text{ Vp-p}$, burst=0.15 Vp-p) to CN911-4/HK-5 (H-2). • E-E mode 	IC501-26/HK-5 (B-3)  Minimize residual chroma component at RED portion (30 mVp-p or less)	① RV502/HK-5 (B-2) ① LV501/HK-5 (D-3)

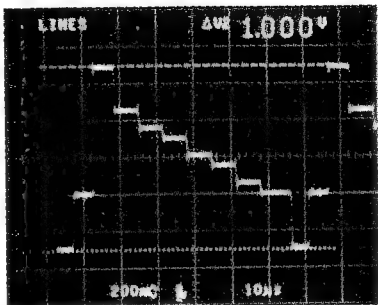
10-6. SYNC AGC ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none">• VIDEO IN: color-bar signal• E-E mode	<div>TP402/HK-5 (D-1)</div> <div></div> <div>0.50±0.02 V</div>	<div>RV302/HK-5 (E-1)</div>

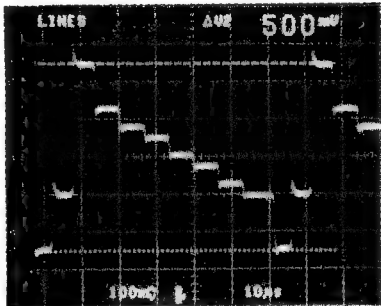
10-7. AGC OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none">• VIDEO IN: color-bar signal• E-E mode	<div>TP301/HK-5 (D-3)</div> <div></div> <div>0.50±0.02 V</div>	<div>RV405/HK-5 (C-1)</div>

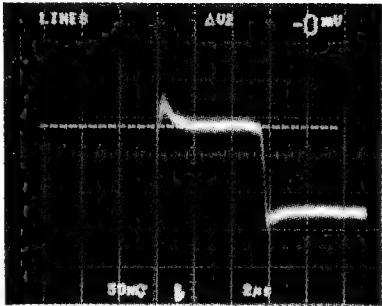
10-8. E-E Y OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • E-E mode 	TP303/HK-5 (E-1)  $1.00 \pm 0.05 \text{ V}$	RV301/HK-5 (E-1)

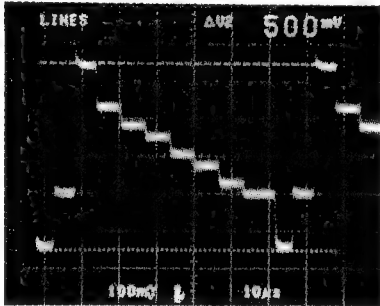
10-9. STD MODE PB Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Play back the color-bar signal portion of the alignment tape WR5-5CSP. 	TP302/HK-5 (D-3)  $0.50 \pm 0.02 \text{ V}$	RV304/HK-5 (E-3)

10-10. PB DE-EMPHASIS ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the color-bar signal portion of the alignment tape WR5-5CSP. 	TP302/HK-5 (D-3)  100% white level=makes flat	⚙ RV304/HK-5 (D-2)

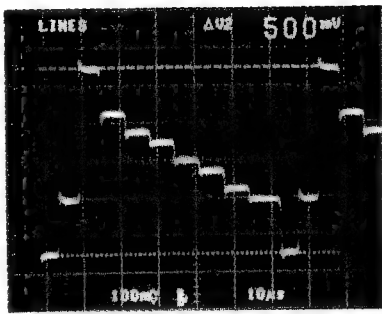
10-11. Hi8 MODE PB Y LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	TP302/HK-5 (D-3)  $0.50 \pm 0.02 \text{ V}$	⚙ RV305/HK-5 (E-3)

10-12. STD MODE Y FM CARRIER ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> VIDEO IN: no signal Use a P5-MP series tape. E-E mode 	IC401-14/HK-5 (D-2) $4.37 \pm 0.02 \text{ MHz}$	⚙ RV402/HK-5 (D-2)

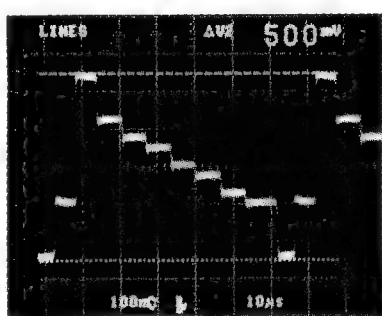
10-13. STD MODE Y FM DEVIATION ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • Perform the self-recording/play back with a P5-MP series tape. 	<p>TP302/HK-5 (D-3)</p>  <p>0.50±0.02 V</p> <ul style="list-style-type: none"> • Repeat recording and play back several times until the level meets the specification. Adjust the RV403 during recording. 	<p>① RV403/HK-5 (E-2)</p> <p>When turning in the clockwise direction, the level decreases.</p>

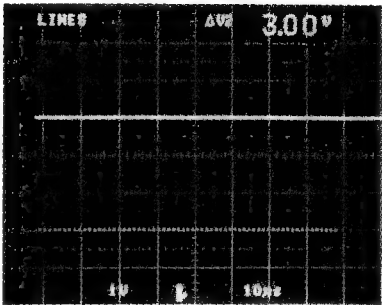
10-14. Hi8 MODE Y FM CARRIER ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: no signal • Use a Hi8 ME series tape. • E-E mode 	<p>TP401/HK-5 (D-3)</p> <p>5.95±0.02 MHz</p>	<p>① RV401/HK-5 (D-2)</p>


10-15. Hi8 MODE Y FM DEVIATION ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • Perform the self-recording/play back with a Hi8 ME tape. 	<p>TP302/HK-5 (D-3)</p>  <p>0.50±0.02 V</p> <ul style="list-style-type: none"> • Repeat recording and play back several times until the level meets the specification. Adjust RV404 during recording. 	<p>① RV404/HK-5 (D-2)</p> <p>When turning in the clockwise direction, the level decreases.</p>

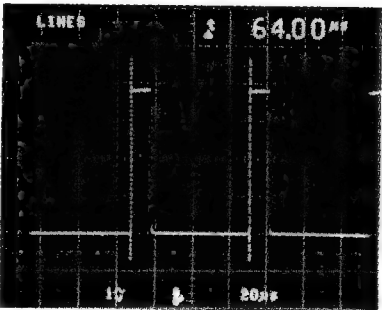
10-16. 375f_H VCO ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • E-E mode 	IC602-26/HK-5 (B-4)  3.0±0.05Vdc	⚙️ RV601/HK-5 (A-4)

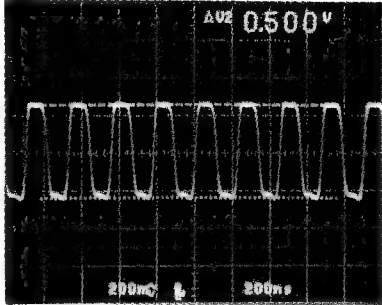
10-17. CHROMA EMPHASIS f₀ ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Connect pin 47 of IC602 to TP904/HK-5 (F-5) via 10 k ohm resistor. • Connect pin 47 of IC602 to ground via 10 k ohm resistor. • VIDEO IN: color-bar signal • E-E mode • After adjustment, remove the resistor. 	IC601-11/HK-5 (A-5)  C (chroma component)=minimum	⚙️ T602/HK-5 (B-6)

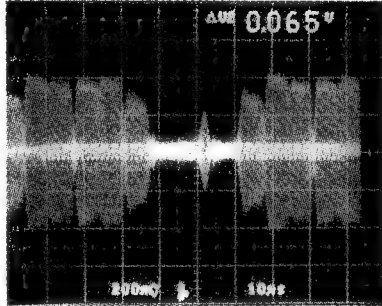
10-18. f_H VCO ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • E-E mode 	IC801-15/HK-5 (A-3)  15625±10Hz	⚙️ RV802/HK-5 (A-3)

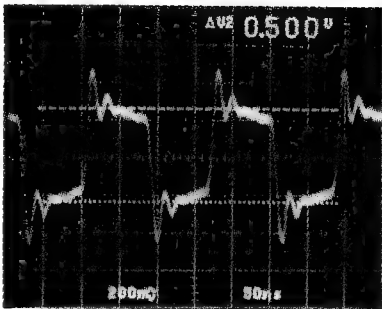
10-19. GAIN CONTROL AMP ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	IC801-22/HK-5 (A-3)  $500 \pm 25\text{mV}$	RV801/HK-5 (A-3)

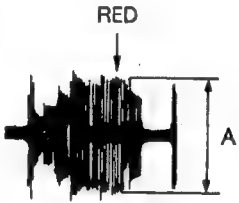
10-20. CARRIER BALANCE ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	TP602/HK-5 (A-5)  3.7MHz or 5.17MHz component=minimum	RV602/HK-5 (A-5)

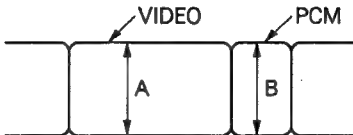
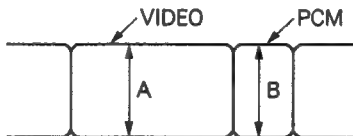
10-21. REC Y RF LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: no signal • Use a Hi8 ME tape • E-E mode 	TP201/HK-5 (F-5)  $0.5 \pm 0.02 \text{ V}$	RV202/HK-5 (F-5)

10-22. REC C RF LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Perform following connections. Q211-emitter (F-5) ↔ TP904/ HK-5 (F-5). • Q608-emitter (B-6) → ground • Remove the C216 (E-5). • VIDEO IN: color-bar signal • E-E mode • After adjustment, remove the jumper wires and solder chip capacitor to C216. 	TP201/HK-5 (D-6)  $A = 100 \pm 10 \text{ mV}$	RV201/HK-5 (E-5)

10-23. SP REC CURRENT ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: 50% white signal • Use a Hi8 ME tape • REC mode 	TP001/FR-43 (A-1)  A (VIDEO) = 200 ± 10 mV	VIDEO CH-1 ●RV002/FR-43 (C-2) Trigger: TP061/FR-43 (B-2)
	TP002/FR-43 (C-1)  A (VIDEO) = 200 ± 10 mV B (PCM) = 200 ± 10 mV	VIDEO CH-2 ●RV001/FR-43 (B-2) PCM ●RV002/RP-103 Trigger: TP061/FR-43 (B-2)

Note: LP REC CURRENT ADJUSTMENT (RV001, RV002) is unnecessary.

10-24. DOC LEVEL ADJUSTMENT

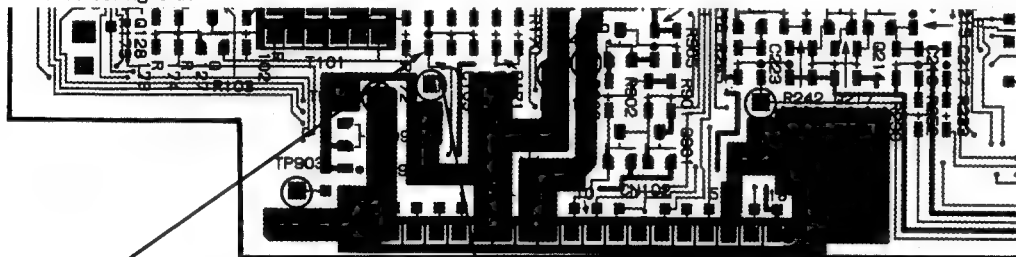
Step 1.

Note: Remove C103 on the HK-5 Board (G-5) for this adjustment. Use the sweep generator and put the marker in the 5 MHz portion. Adjust the level of marker to the level described below steps with variable volume of the sweep generator. After adjustment, solder the chip capacitor (0.047 μ F) to C103 on the HK-5 Board (G-5).

Be sure to use the new capacitor. (1-163-035-00)

Connect the output of sweep generator to the point of HK-5 Board after removing C103 as described below.

HK-5 soldering side



Connect the sweep generator at this point

C103

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the alignment tape WR5-7CE. Adjust the marker level of the sweep generator to meet the specification. 	<p>IC501-17/HK-5 (C-2)</p>	<p>RV101/HK-5 (H-4)</p>

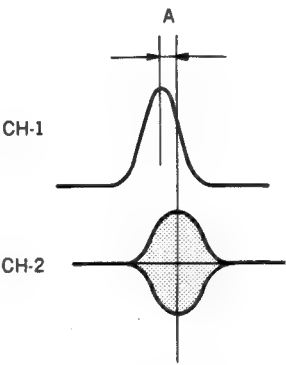
• After adjustment, remove the sweep generator and solder chip capacitor to C103.

Step 2.

Use the oscilloscope in this adjustment.

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Supply the composite color-bar signal (Y=0.5 Vp-p, Burst= 0.15 Vp-p, chroma OFF) to CN911-4 pin on the HK-5 Board (H-2). 	<p>TP501/HK-5 (C-2)</p> <p>A=0\pm150 mVp-p</p>	<p>RV501/HK-5 (B-2)</p>

10-25. Y/C DELAY ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: pulse & bar signal • E-E mode 	<p>CH-1 : TP303/HK-5 (E-1) CH-2 : TP801/HK-5 (A-1)</p>  <p>Minimize the A</p>	<p>RV700/HK-5 (H-5)</p>

10-26. CARRIER-LEAK CANCEL ADJUSTMENT (1)

10-26-1. External Sync AFC Adjustment

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • SYNC IN: color-bar signal • E-E mode 	TP731/DI-13 (F-2) $2.5 \pm 0.1 \text{ Vdc}$	① CV11/DI-13 (F-3)
	TP732/DI-13 (E-6) $2.5 \pm 0.1 \text{ Vdc}$	① CV21/DI-13 (E-6)
	TP801/DI-12 (A-2) $2.5 \pm 0.1 \text{ Vdc}$	① CV31/DI-12 (A-3)

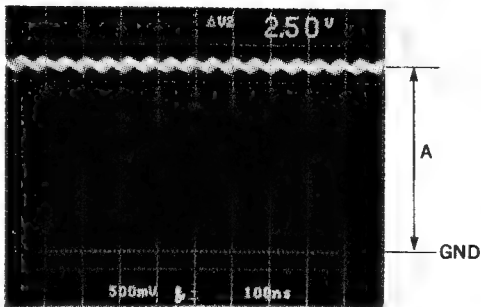
10-26-2. Sync Generator Clock Adjustment

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • SYNC IN: no signal • E-E mode 	TP760/DI-13 (E-5) $17734475 \pm 50 \text{ Hz}$	① RV750/DI-13 (D-4)

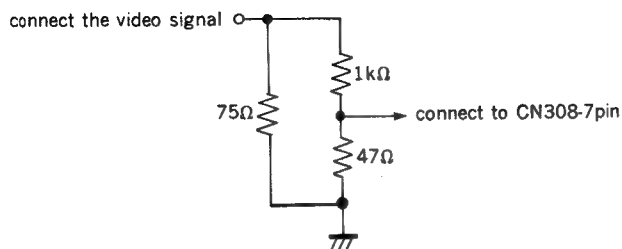
10-26-3. AFC Adjustment

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: no signal • E-E mode 	TP203/DI-12 (H-2) $14218.75 \pm 50 \text{ kHz}$	① CV301/DI-12 (H-1)

10-26-4. APC Adjustment

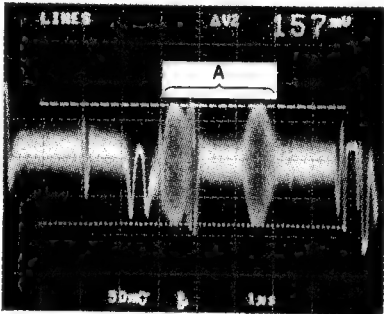
Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	TP205/DI-12 (H-4)  $A = 2.5 \pm 0.3 \text{ Vdc}$	① CV302/DI-12 (J-4)

10-27. CARRIER-LEAK CANCEL ADJUSTMENT(2)

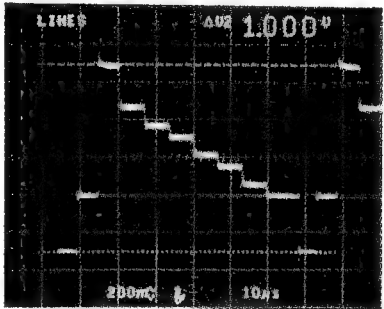


Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Disconnect CN308 of VO-30 Board (H-5). • Solder a resistor to the pattern of CN308-7 pin as described above. • Connect the pulse & bar signal to 1 k ohm resistor. • E-E mode 	<p>TP1/VO-30 (L-4)</p> <p>A (burst portion)=minimum</p>	<p>RV1/VO-30 (K-5)</p>
<ul style="list-style-type: none"> • Disconnect CN308 of VO-30 Board (H-5). • Solder a resistor to the pattern of CN308-7 pin as described above. • Connect the color-bar signal to 1 k ohm resistor. • E-E mode • After adjustment, remove the resistor and connect CN308. 	<p>TP4/VO-30 (J-2)</p> <p>A (chroma)=minimum (minimize the all chroma components)</p>	<p>RV2/VO-30 (J-4) RV3/VO-30 (J-3)</p>

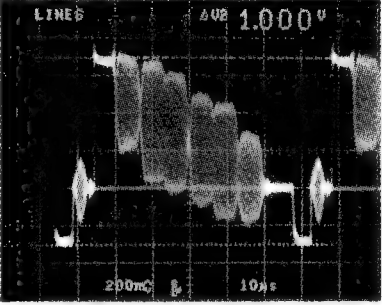
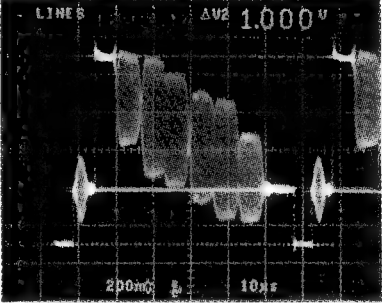
10-28. NOISE CANCEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • Connect TP2 (L-4) and E1 (L-4) on the VO-30 board with jumper wire. • E-E mode • After adjustment, remove jumper wire. 	CH-1: TP51/VO-30 (H-2) CH-2: TP52/VO-30 (J-1) (Level of TP51)×2=level of TP52	① RV51/VO-30 (J-1)
	TP53/VO-30 (J-2)  A (burst portion)=minimum	① RV52/VO-30 (K-1)

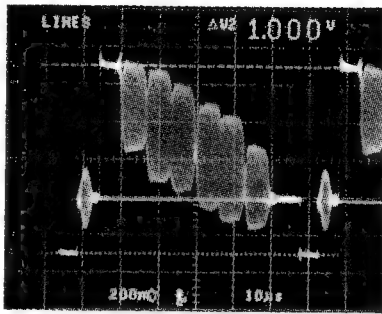
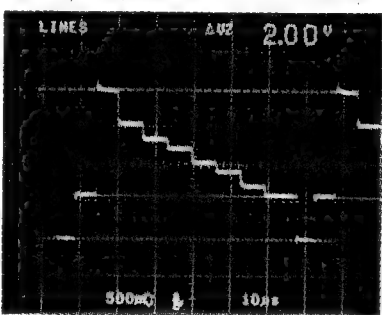
10-29. Y A/D OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Play back the color bar signal portion of the alignment tape WR5-8CSE. 	TP651/DI-13 (B-7)  $1.0 \pm 0.1 \text{ V}$	① RV201/DI-13 (G-5)

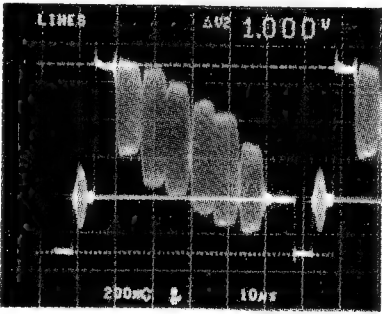
10-30. CNR MODE LINE OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO OUT: terminating with 75 ohm • Play back the color-bar signal portion of the alignment tape WR5-8CSE. 		
Step 1 • DIGITAL CNR SW (sub panel): BYPASS	TP5/VO-30 (M-4)  Check the waveform is as shown in the figure. Value of this time is A.	
Step 2 • DIGITAL CNR SW (sub panel): AUTO	TP5/VO-30 (M-4)  $B = A \pm 0.01 \text{ Vp-p}$	⚙ RV651/DI-13 (B-3)

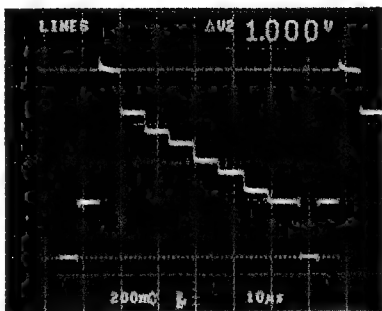
10-31. LINE OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO OUT: terminating with 75 ohm • Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	VIDEO OUT connector  $1.00 \pm 0.05 \text{ V}$	RV4/VO-30 (L-3)
	TP301/VO-30 (H-2)  $2.0 \pm 0.1 \text{ V}$	RV302/VO-30 (G-1)

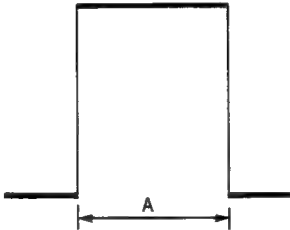
10-32. MONITOR OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Terminate the MONITOR OUT connector with 75 ohm terminator. • Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	TP101/VO-30 (M-3)  $1.00 \pm 0.05 \text{ V}_{p-p}$	RV101/VO-30 (H-4)

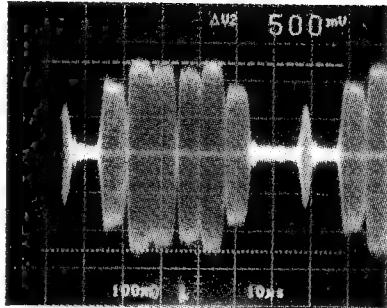
10-33. DUB Y OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Play back the color-bar signal portion of the alignment tape WR5-8CSE. • DUB OUT SW: HIGH/SP 	TP202/VO-30 (H-5)  $1.0 \pm 0.1 \text{ V}$	① RV201/VO-30 (H-4)

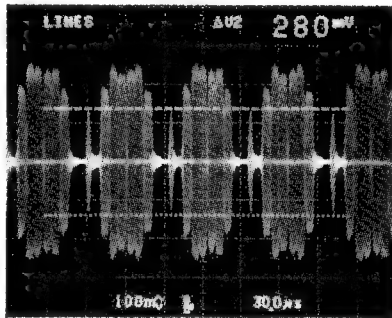
10-34. HIGH SPEED ACC GATE WIDTH ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: pulse & bar signal • E-E mode 	TP403/VO-30 (A-3)  $A = 2.1 \pm 0.2 \mu\text{sec}$ (Adjust at the jitter center)	① RV400/VO-30 (A-1)

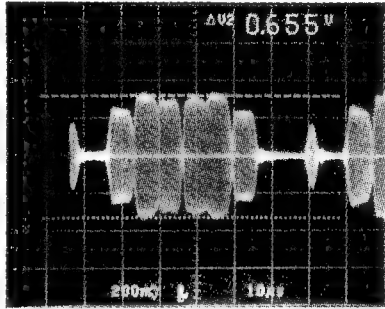
10-35. HIGH SPEED ACC LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> DIGITAL CNR SW (sub panel): : BYPASS Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	<p>TP406/VO-30 (C-3)</p>  <p>0.5±0.05 V</p>	<p>RV403/VO-30 (B-4)</p> <p>Trigger: TP5/VO-30 (M-4)</p>

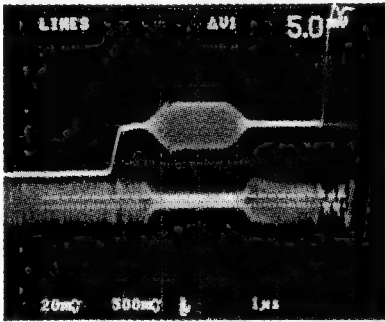
10-36. CHROMA A/D INPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the color bar signal portion of the alignment tape WR5-8CSE. 	<p>TP652/DI-13 (A-7)</p>  <p>A=0.286±0.01 Vp-p PB burst level=Replacement burst level (±0.01V)</p>	<p>RV202/DI-13 (H-5)</p> <p>Trigger: TP651/DI-13 (B-7)</p>


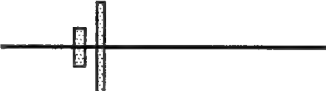
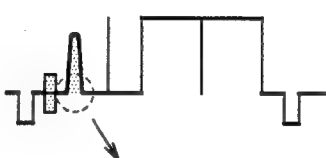
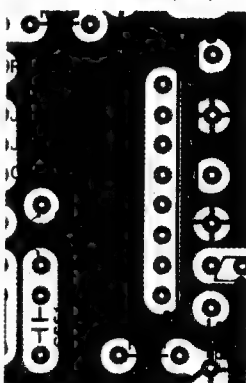
10-37. CNR MODE CHROMA OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Paly back the color-bar signal portion of the alignment tape WR5-8CSE. 		
Step 1 <ul style="list-style-type: none"> • DIGITAL CNR SW: BYPASS 	TP408/VO-30 (A-3) Value of this time is A.	
Step 2 <ul style="list-style-type: none"> • DIGITAL CNR SW: AUTO 	TP408/VO-30 (A-3)  $A \pm 0.05 \text{ V}$	RV652/DI-13 (A-3)

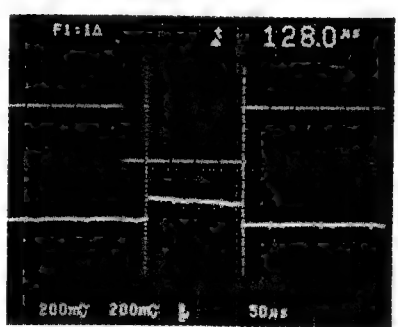
10-38. CHROMA NOISE CANCEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • E-E mode 	TP407/VO-30 (C-3)  burst portion=less than 10 mVp-p	RV404/VO-30 (C-3) Trigger: TP5/VO-30 (M-4)

10-39. DUB Y/C DELAY ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: MOD 10T pulse signal • E-E mode • DUB OUT (U-matic) SW: LOW 	<p>CH-1: TP202/VO-30 (H-5) CH-2: TP501/VO-30 (D-5)</p> <p>TP202</p>  <p>TP501</p>  <p>ADD mode</p>  <p>NG OK NG (Chroma signal advanced) (Chroma signal delay)</p>	<p>DL500/VO-30 (F-3)</p>  <p>Set the waveform to OK position. Move the DL500 in the direction that chroma delays two taps, and solder it.</p> <p>Trigger: TP5/VO-30 (M-4)</p>

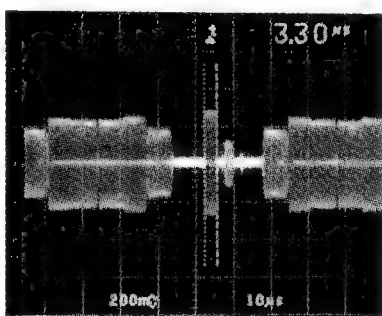
10-40. 1st FIELD PULSE WIDTH ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	<p>CH-1: TP602/VO-30 (A-2) CH-2: TP202/VO-30 (H-5)</p>  <p>128 ± 30 μsec</p>	<p>RV405/VO-30 (A-2)</p>

10-41. LOCAL OSCILLATOR FREQUENCY ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • DUB OUT (U-matic) sw: LOW • VIDEO IN: no signal • E-E mode 	TP502/VO-30 (E-3) $5119165 \pm 5\text{Hz}$	① CV500/VO-30 (E-1)
<ul style="list-style-type: none"> • DUB OUT (U-matic) sw: HIGH/SP • VIDEO IN: no signal • E-E mode 	TP502/VO-30 (E-3) $5357447 \pm 5\text{Hz}$	① CV650/VO-30 (E-2)

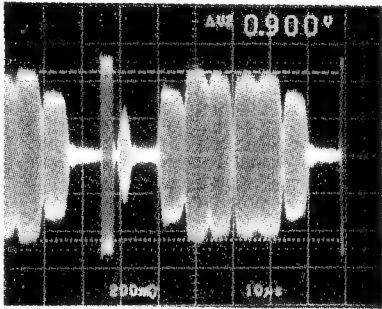
10-42. PILOT BURST ADJUSTMENT (1)

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • SYNC IN: black burst signal • E-E mode • Turn the GAIN knob of the vectorscope and adjust red beam spot to be in the center of "田" mark. 	STEP 1. TP501/VO-30 (D-5) Put the pilot burst to the circle of vectorscope.	① RV601/VO-30 (D-2)
	STEP 2. TP501/VO-30 (D-5)  $3.3 \pm 0.1 \mu\text{sec}$	① RV600/VO-30 (C-3)
	STEP 3. TP501/VO-30 (D-5) Put the pilot burst to the U axis of vectorscope. (within $\pm 1^\circ$)	① LV600/VO-30 (D-1)

10-43. PILOT BURST ADJUSTMENT (2)

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	<p>TP501/VO-30 (D-5)</p> <p>Put the pilot burst to the circle of vectorscope and align with U axis. (within $\pm 3^\circ$)</p>	<p>RV602/VO-30 (D-5)</p>

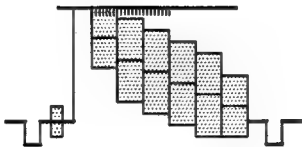
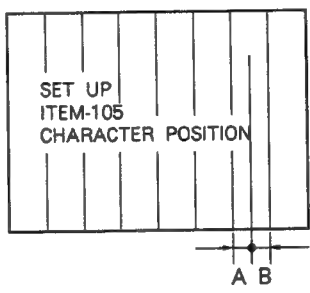
10-44. DUB CHROMA OUTPUT LEVEL ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	<p>TP503/VO-30 (F-5)</p>  <p>0.90 \pm 0.05 V</p>	<p>RV501/VO-30 (E-4)</p> <p>Trigger: TP5/VO-30 (M-4)</p>

10-45. Y/C MIX ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> Play back the color-bar signal portion of the alignment tape WR5-8CSE. 	<p>VIDEO OUT connector</p> <ul style="list-style-type: none"> Adjust RV5 so that RED beam component should be in the center of 田 portion. 	<p>RV5/VO-30 (L-4)</p>

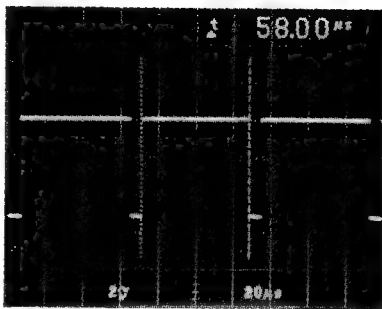
10-46. CHARACTER MIX ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: full color-bar signal • E-E mode • Set the COUNTER/TC/DIAL MENU SW to DIAL MENU. • Connect the monitor to MONITOR OUT connector. • After adjustment, set the COUNTER/TC/DIAL MENU SW to center. 	TP101/VO-30 (M-3) <ul style="list-style-type: none"> • While pressing the MENU key, turn the Search Dial and set the counter value for "105". • Match the white level and the character level. 	<ul style="list-style-type: none"> • RV100/VO-30 (L-1)
	DISPLAY  <p>Adjust CV100 so that the right edge of the character N is positioned in the center (A=B) of blue area.</p>	<ul style="list-style-type: none"> • CV100/SY-145A (J-5)

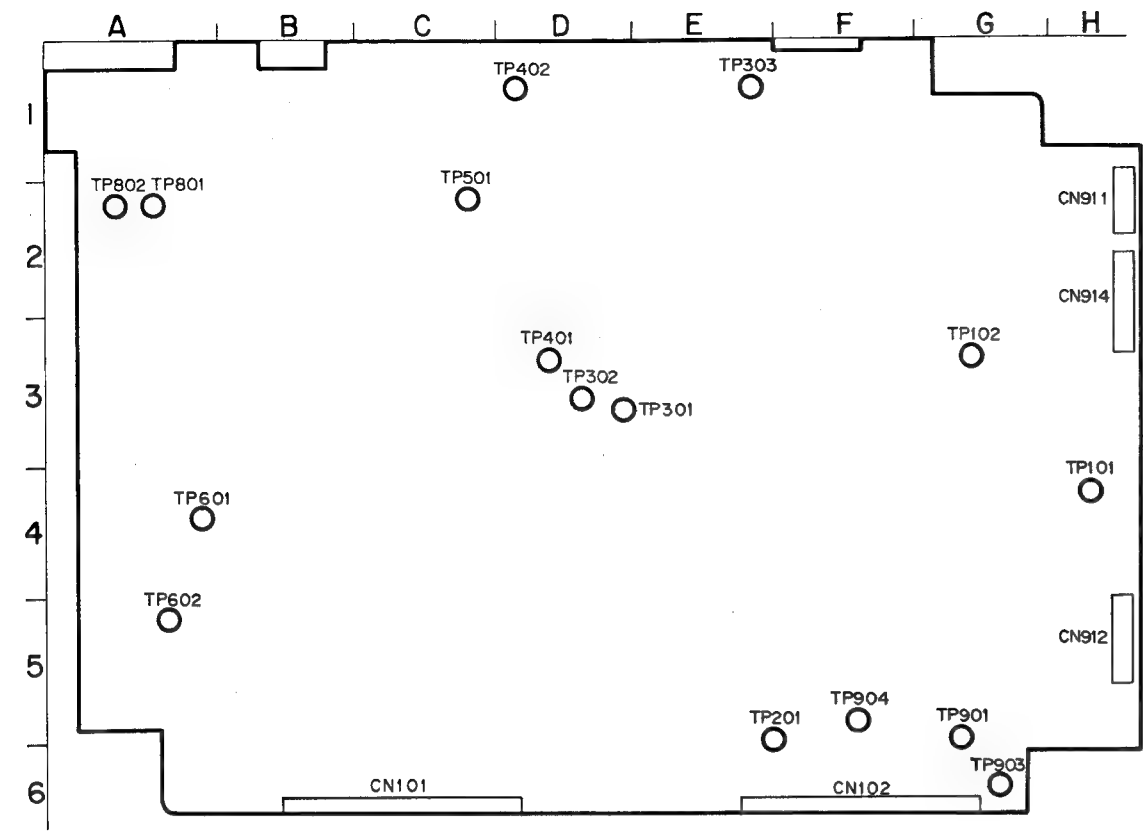
10-47. SLOW TRACKING ADJUSTMENT

Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • Perform the self-recording/play back about 20 sec. with a Hi8 ME tape. • Set the Slow Adjust Volume of Sub Panel to the center click position. • Connect the counter to TP1/DI-12 (B-6). • Put the unit into the SHUTTLE mode and turn the Search Dial in the FWD direction so that the frequency is 192 Hz. Play back the recorded portion. (It corresponds to one-fifth time speed.) 	Minimize the noise on the monitor screen.	<ul style="list-style-type: none"> • RV1/SY-145A (C-1)

10-48. CHARACTER DISPLAY RANGE ADJUSTMENT

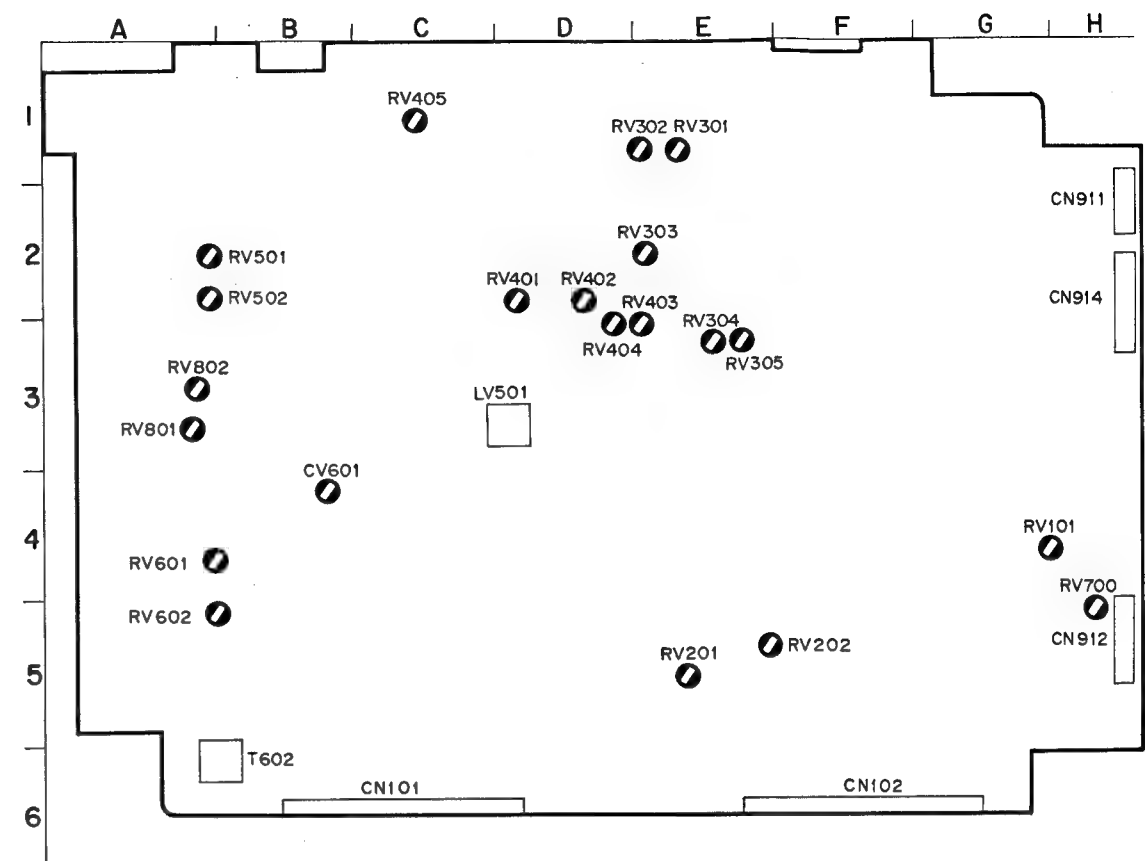
Machine condition for adjustment	Specifications	Adjustments
<ul style="list-style-type: none"> • VIDEO IN: color-bar signal • E-E mode 	TP101/SY-145A (I-5)  58±1 μS	RV2/SY-145A (E-5)

Location of TPs on the HK-5 Board.



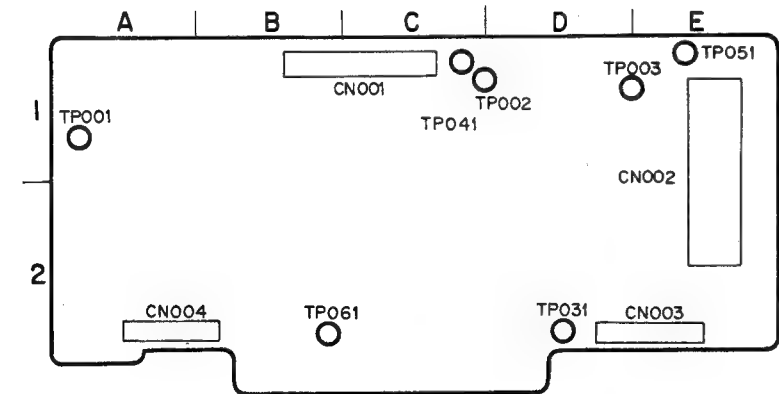
Place the unit on its right side down. Remove the Bottom Plate and Core Shield Plate. Open the HK-5 Board.

Locations of RVs, CVs, LVs and T on the HK-5 Board.



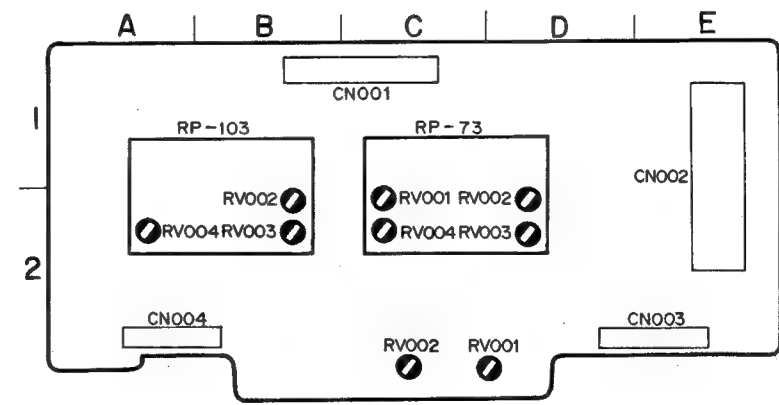
Place the unit on its right side down. Remove the Bottom Plate and Core Shild Plate. Open the HK-5 Board.

Location of TPs on the FR-43 Board.



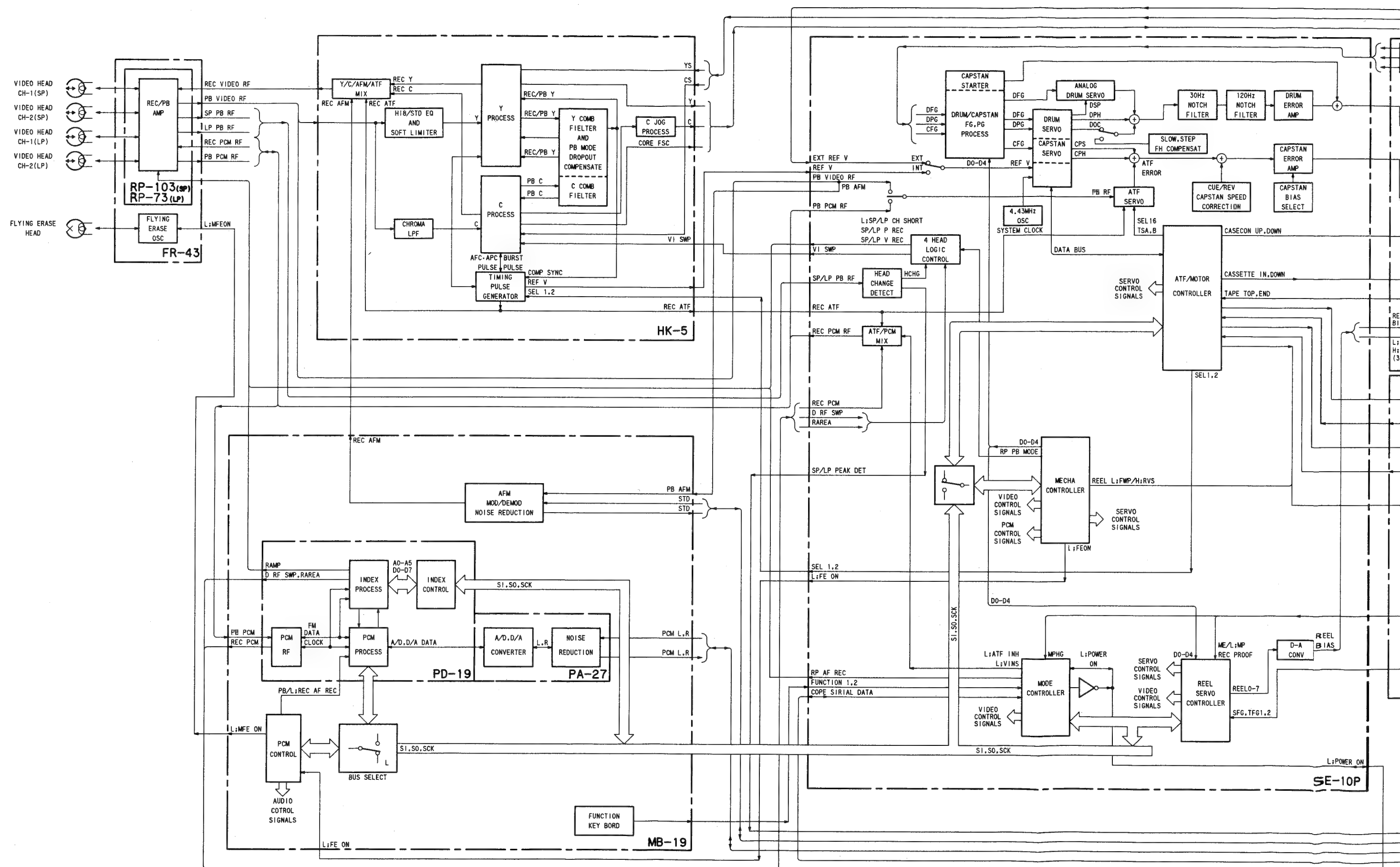
Remove the Top Plate and Open the MB-19 Board.

Location of RVs on the FR-43 and RP-73, RP-103 Boards.



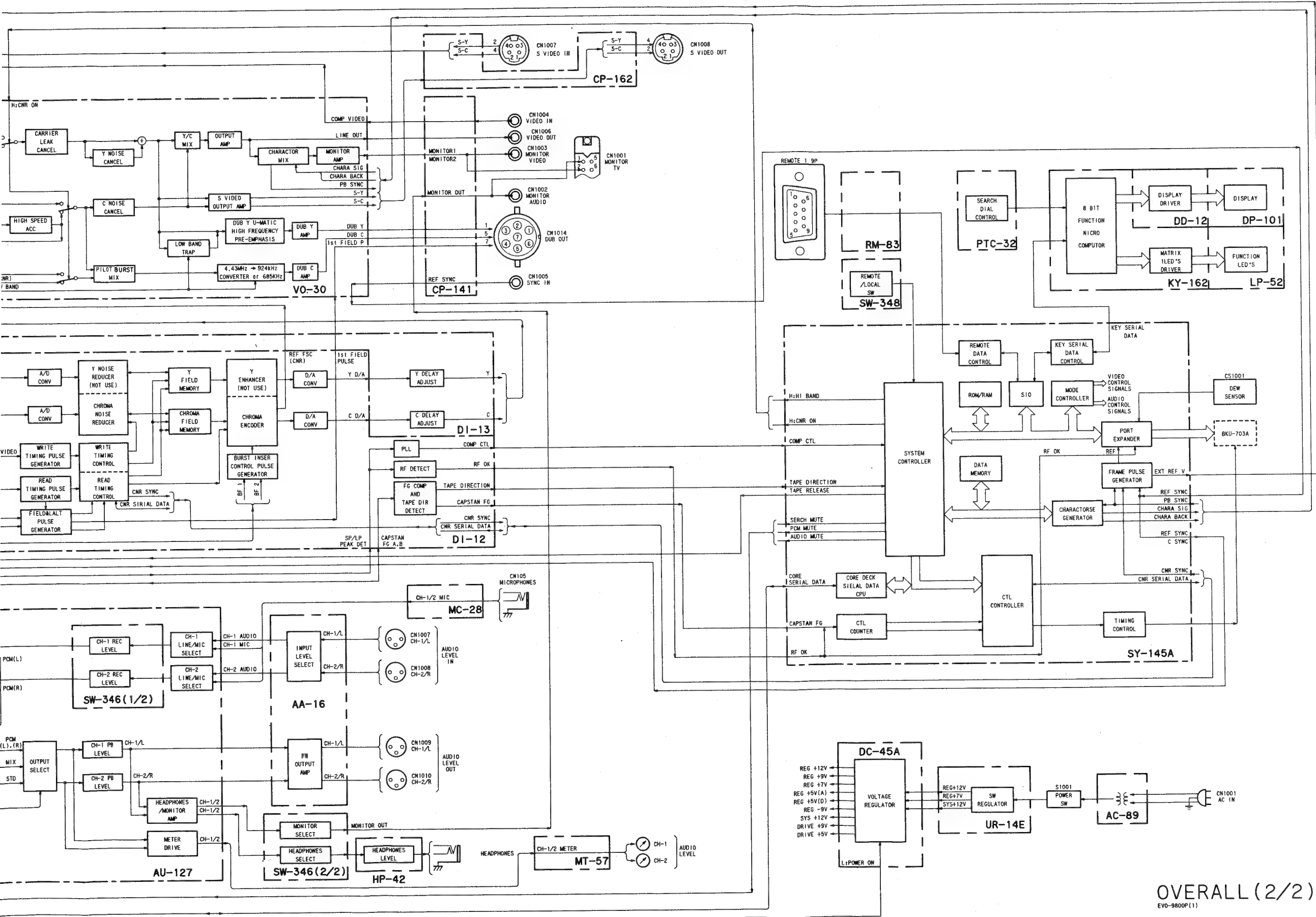
Remove the Top Plate and Open the MB-19 Board.

SECTION 11
BLOCK DIAGRAM









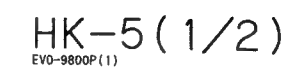
OVERALL (2/2)

EVO-9800P(1)

Y PROCESS **Y PROCESS**

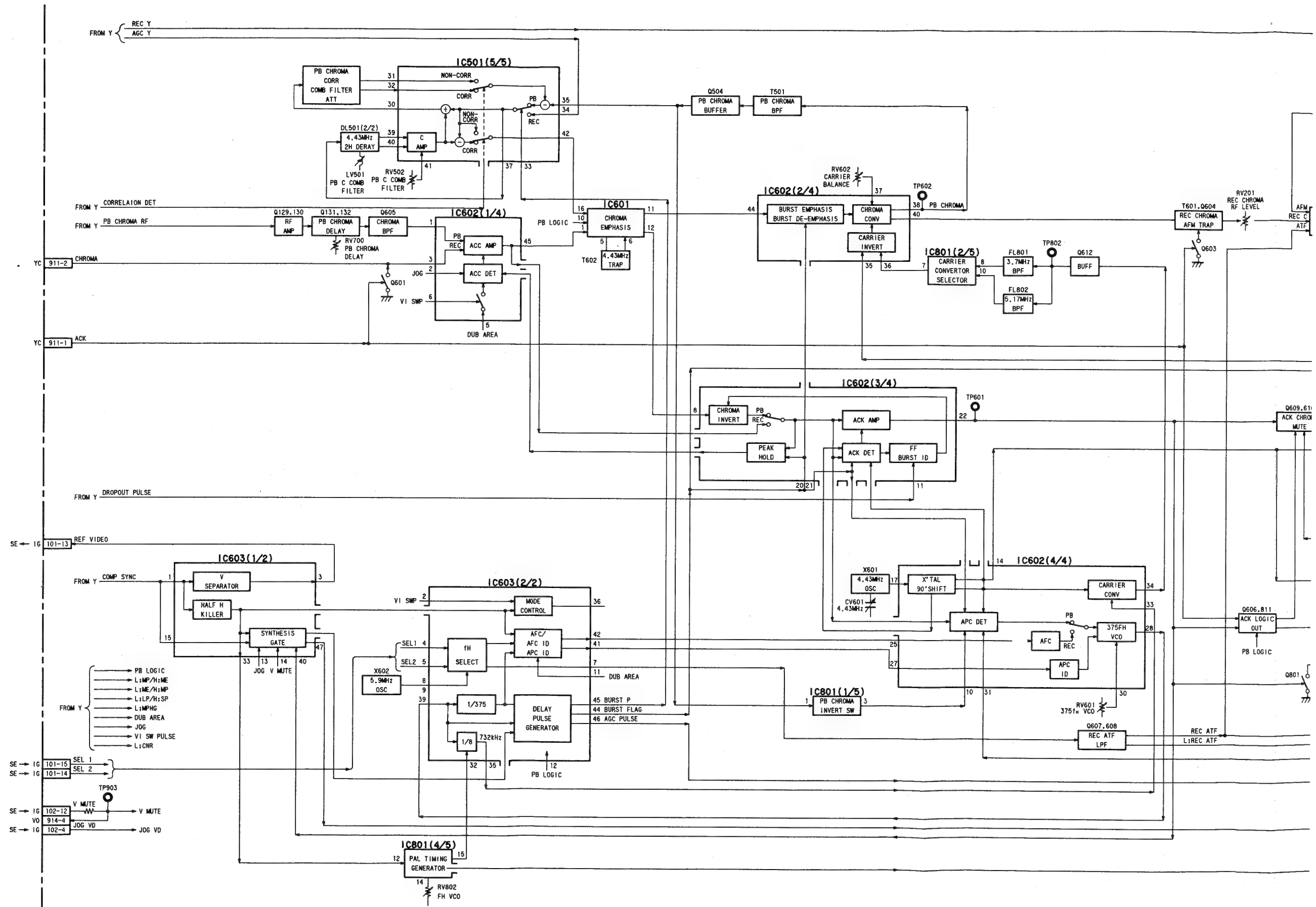


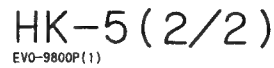
Y PROCESS **Y PROCESS**



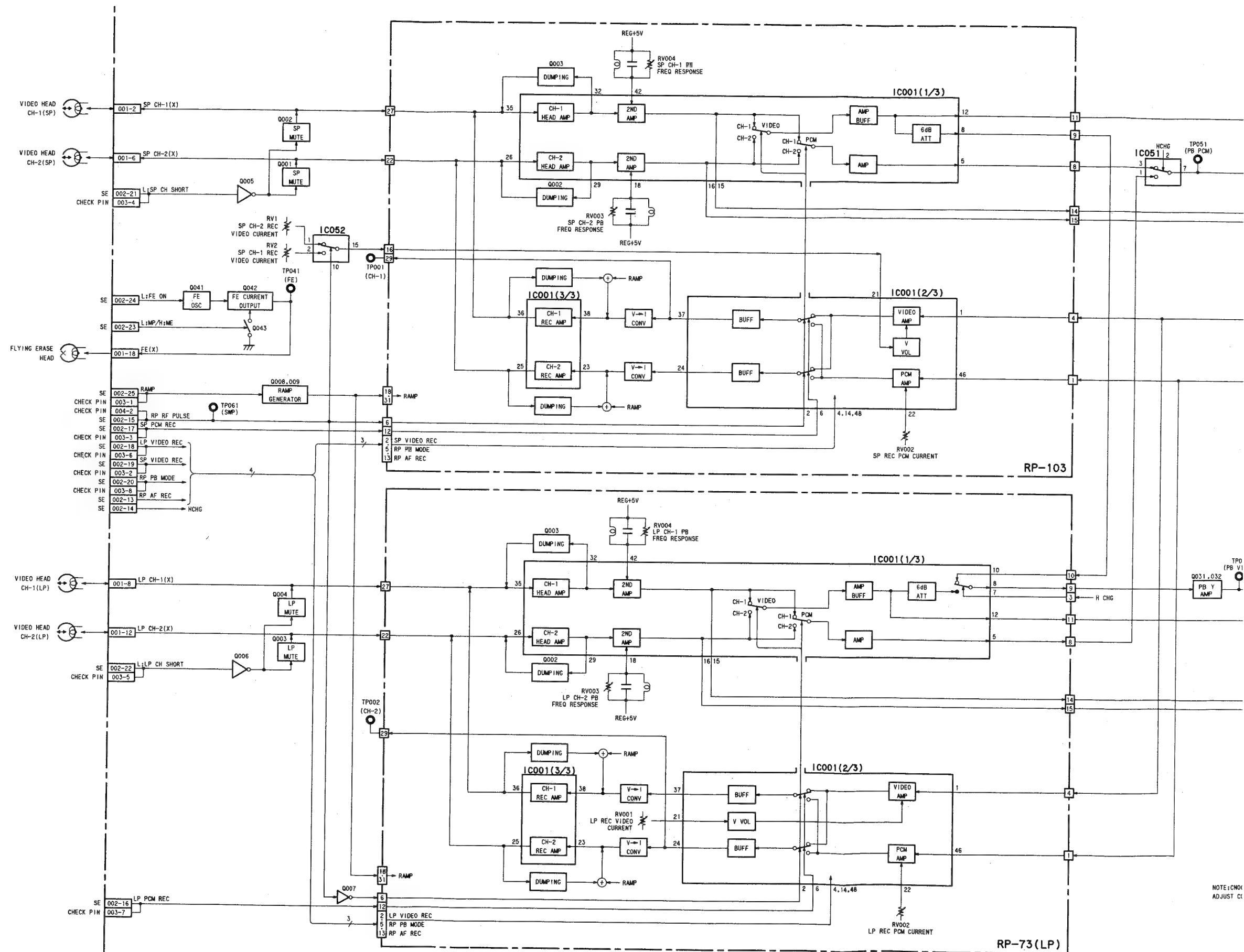
CHROMA PROCESS

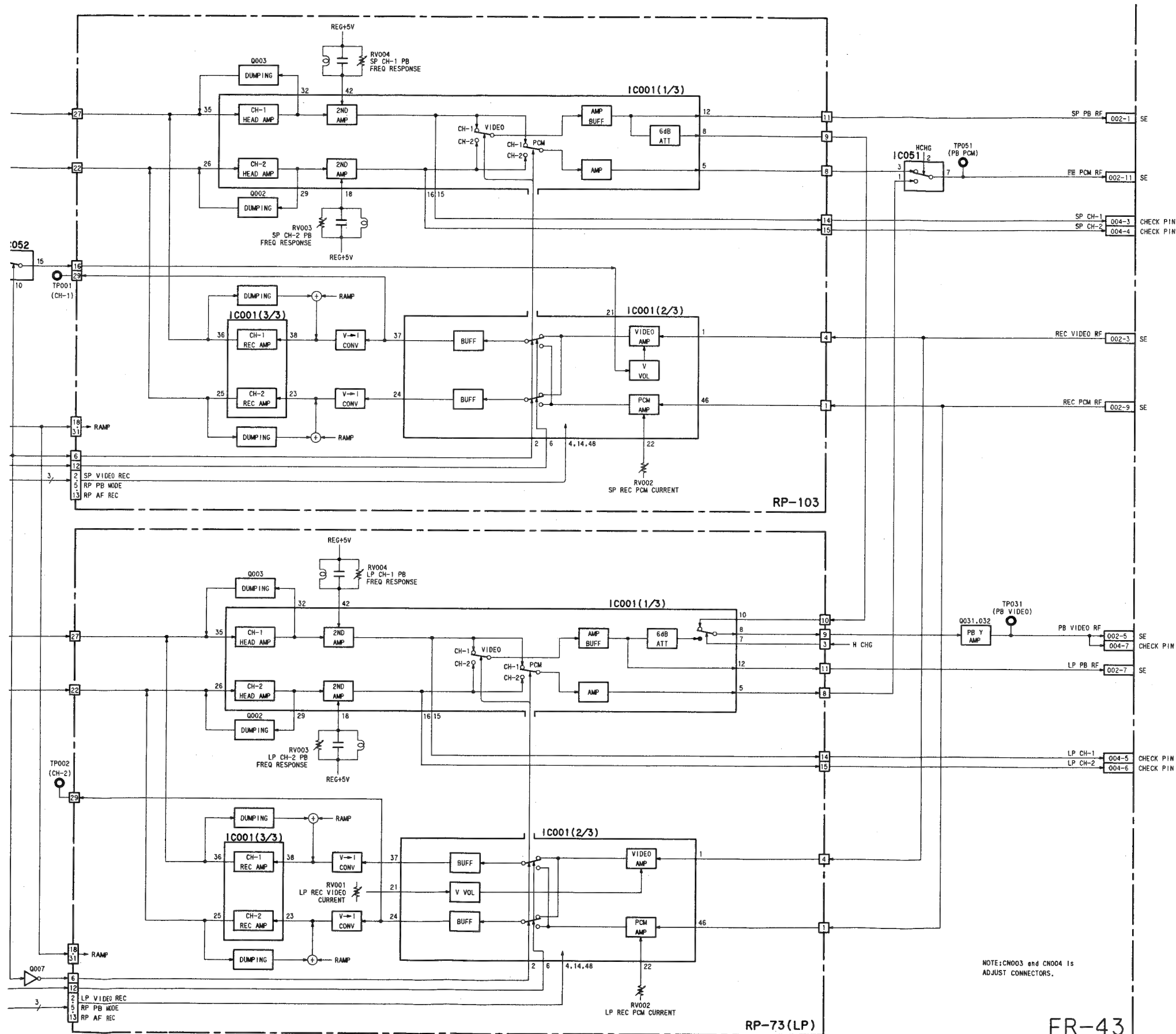
CHROMA PROCESS CHROMA PROCESS





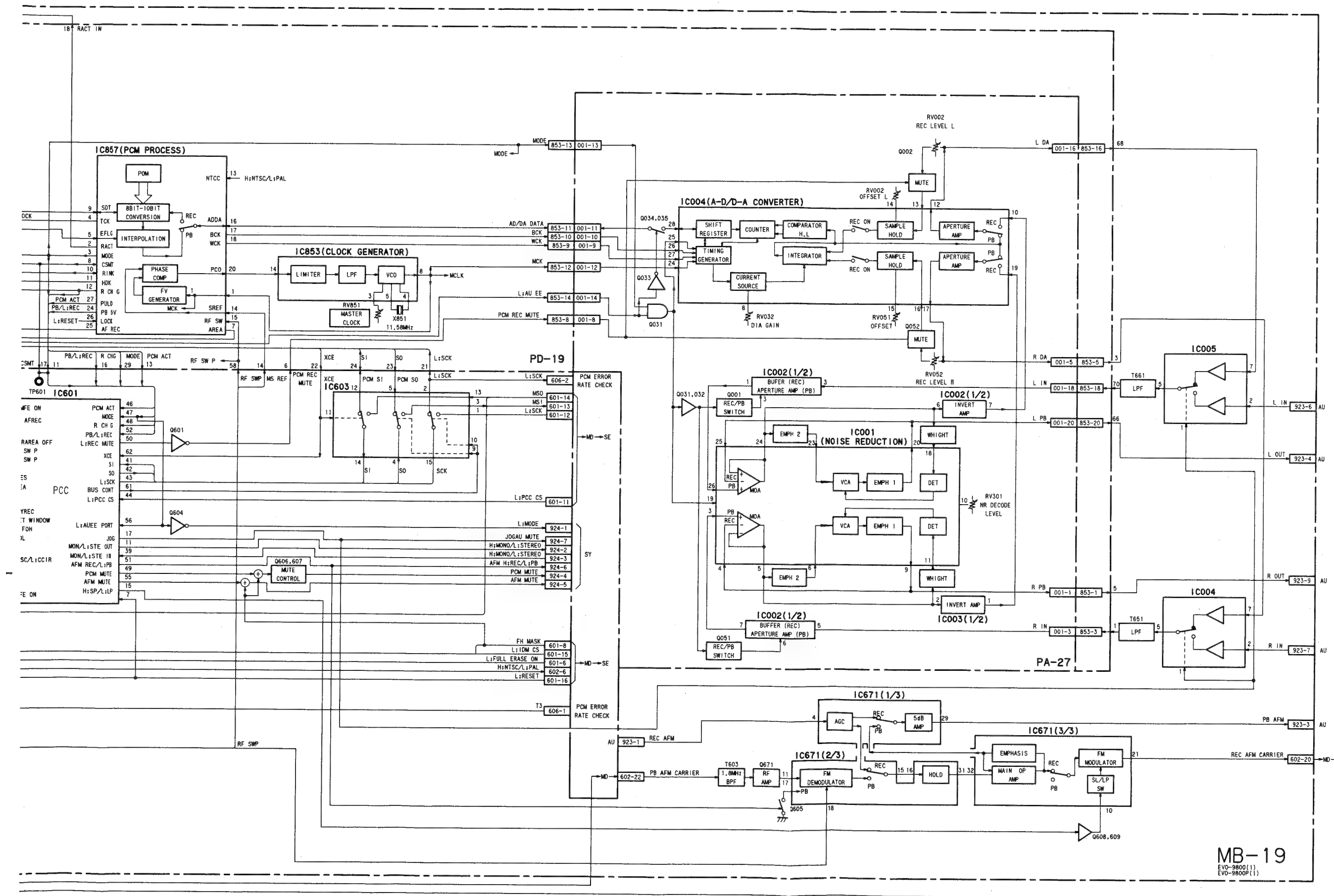
REC/PB HEAD AMP



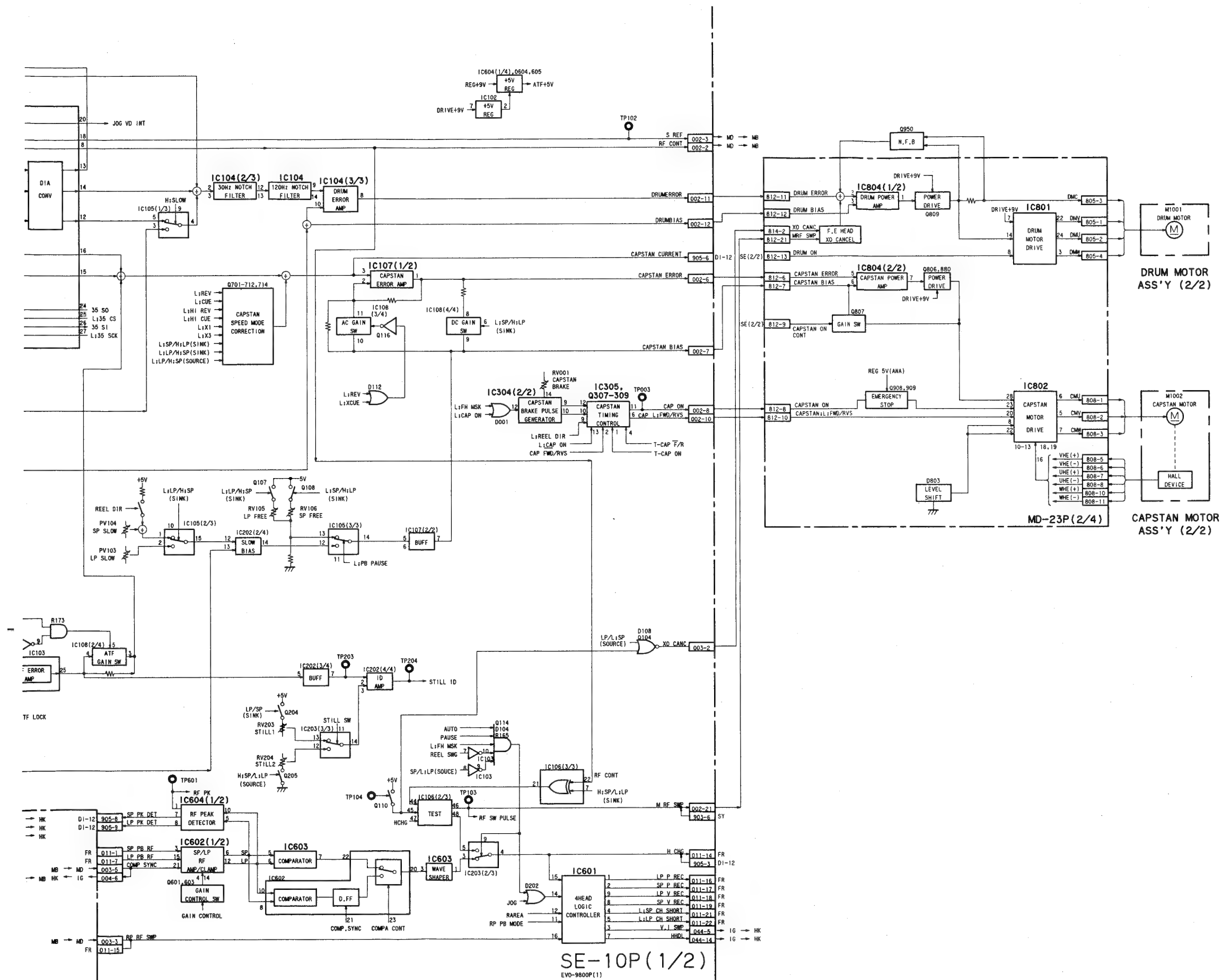


PCM AUDIO PCM AUDIO





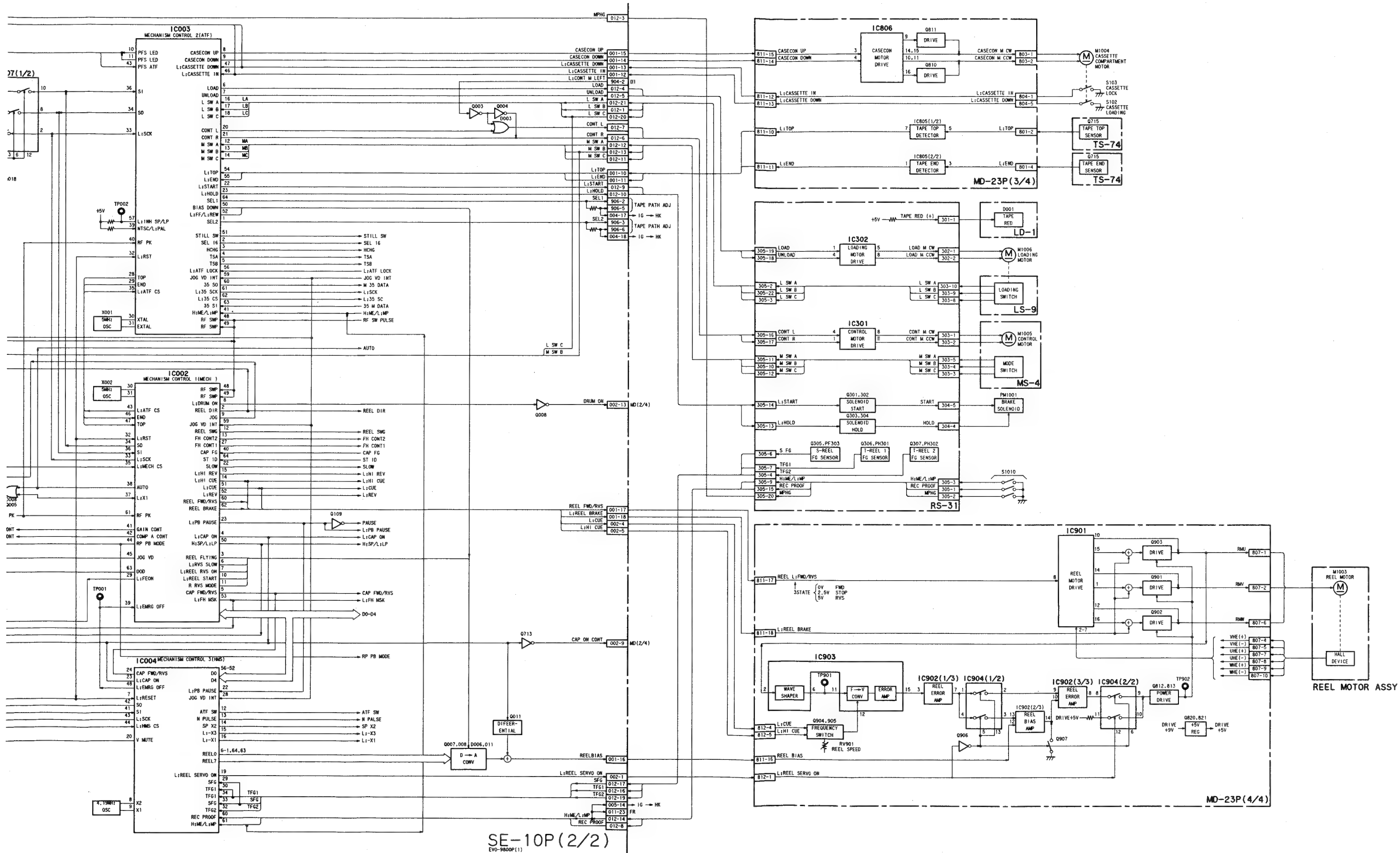




REEL SERVO, SYSTEM CONTROL

11-9





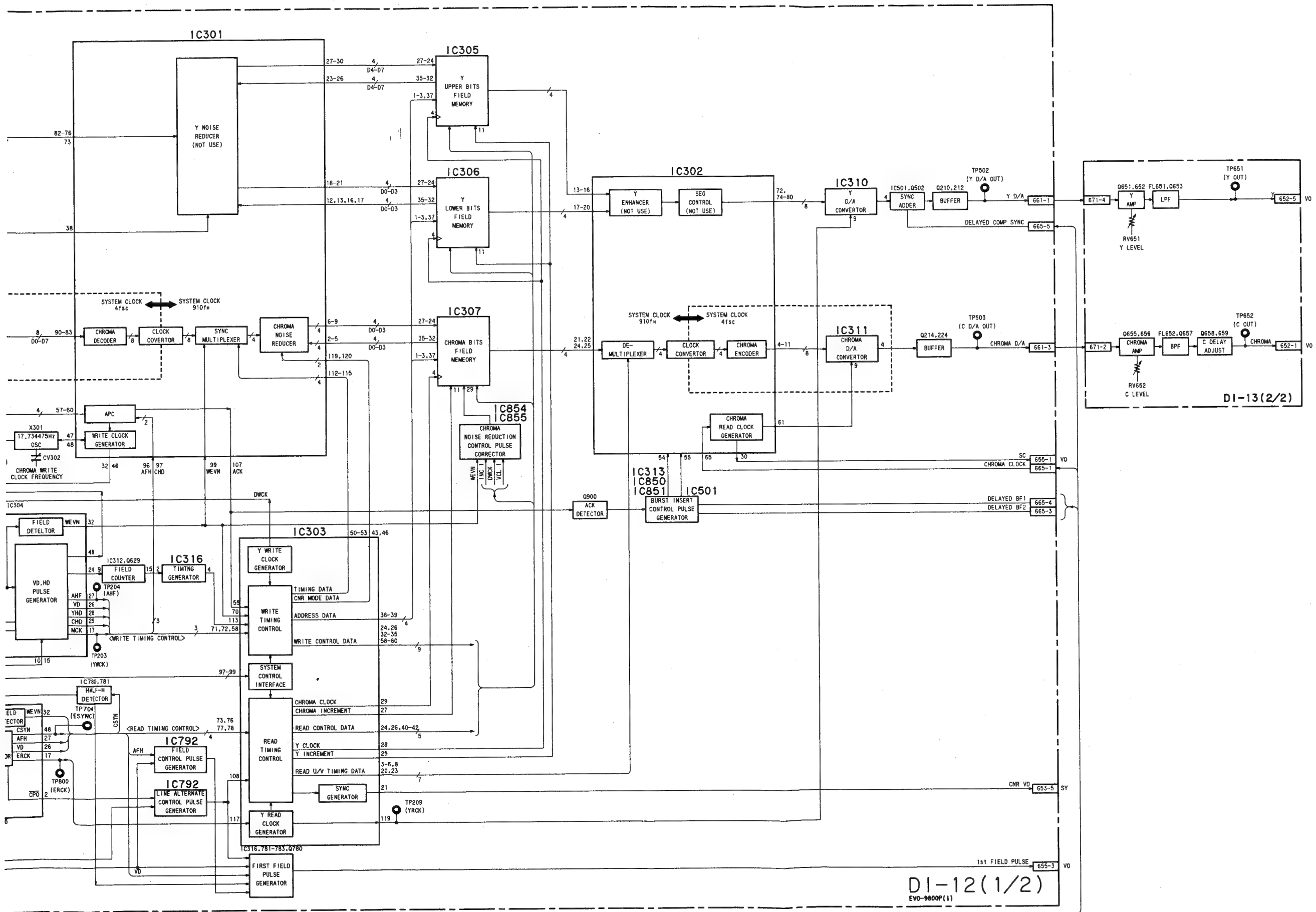
VIDEO INTERFACE **VIDEO INTERF**

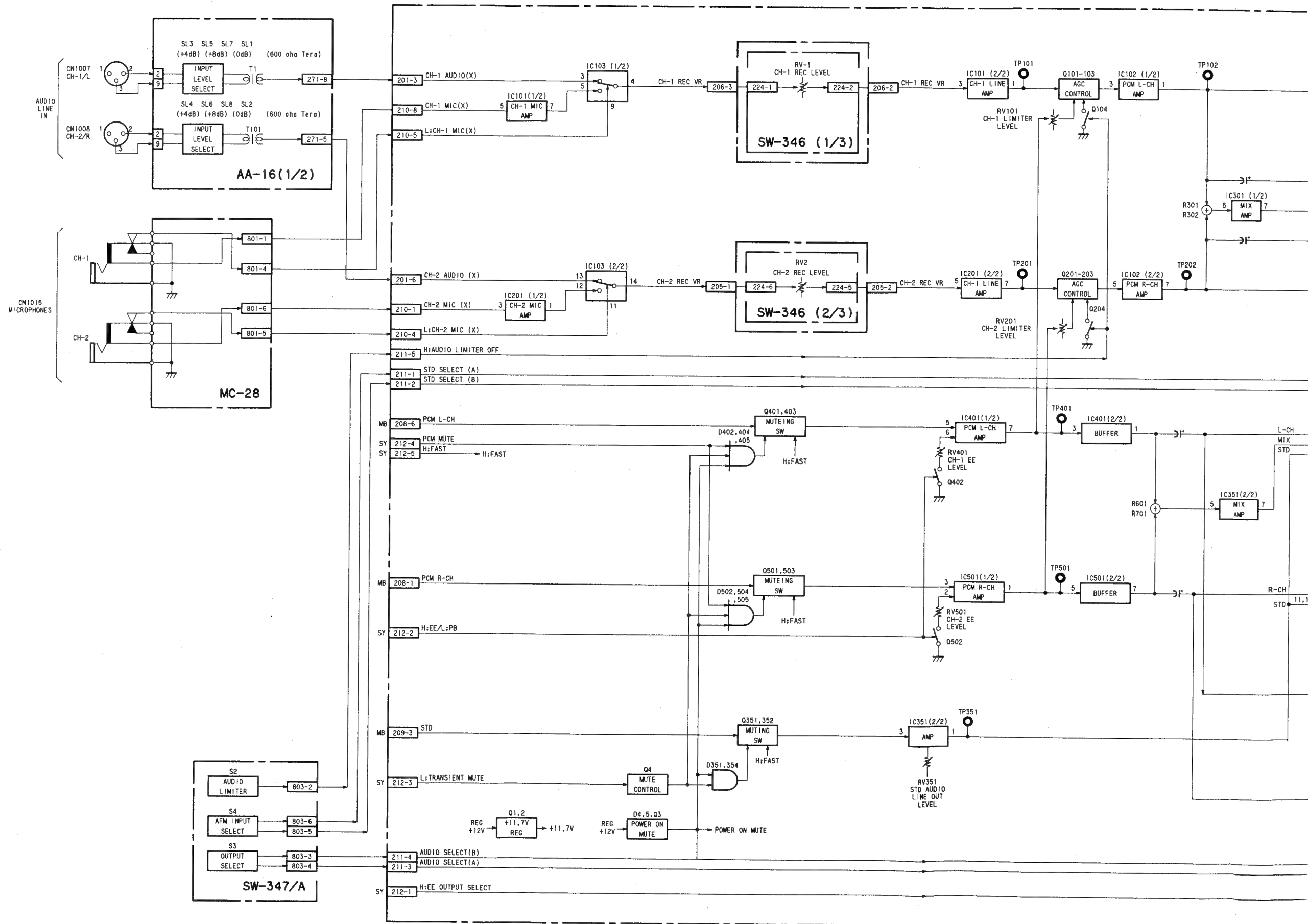


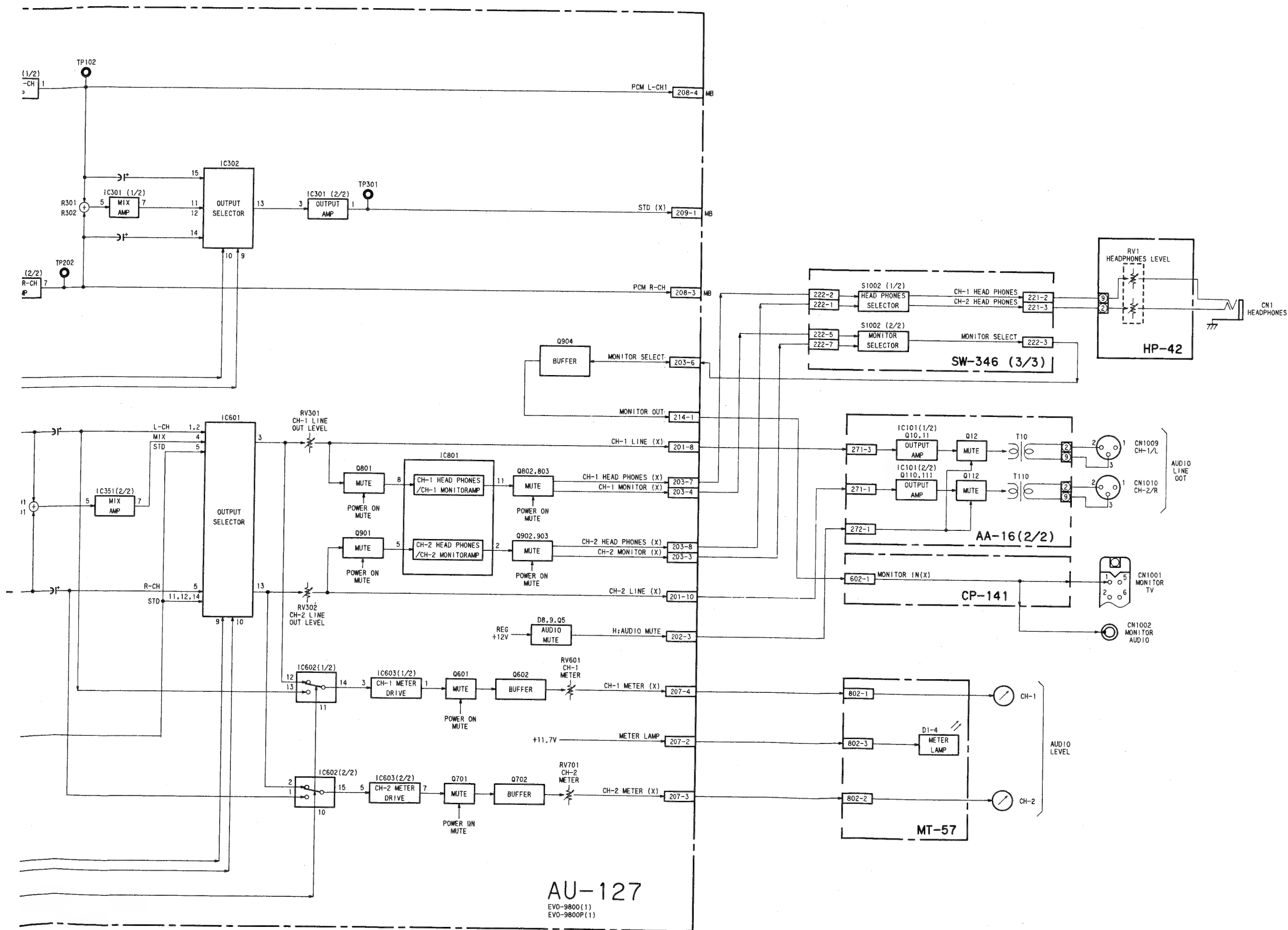
VIDEO INTERFACE





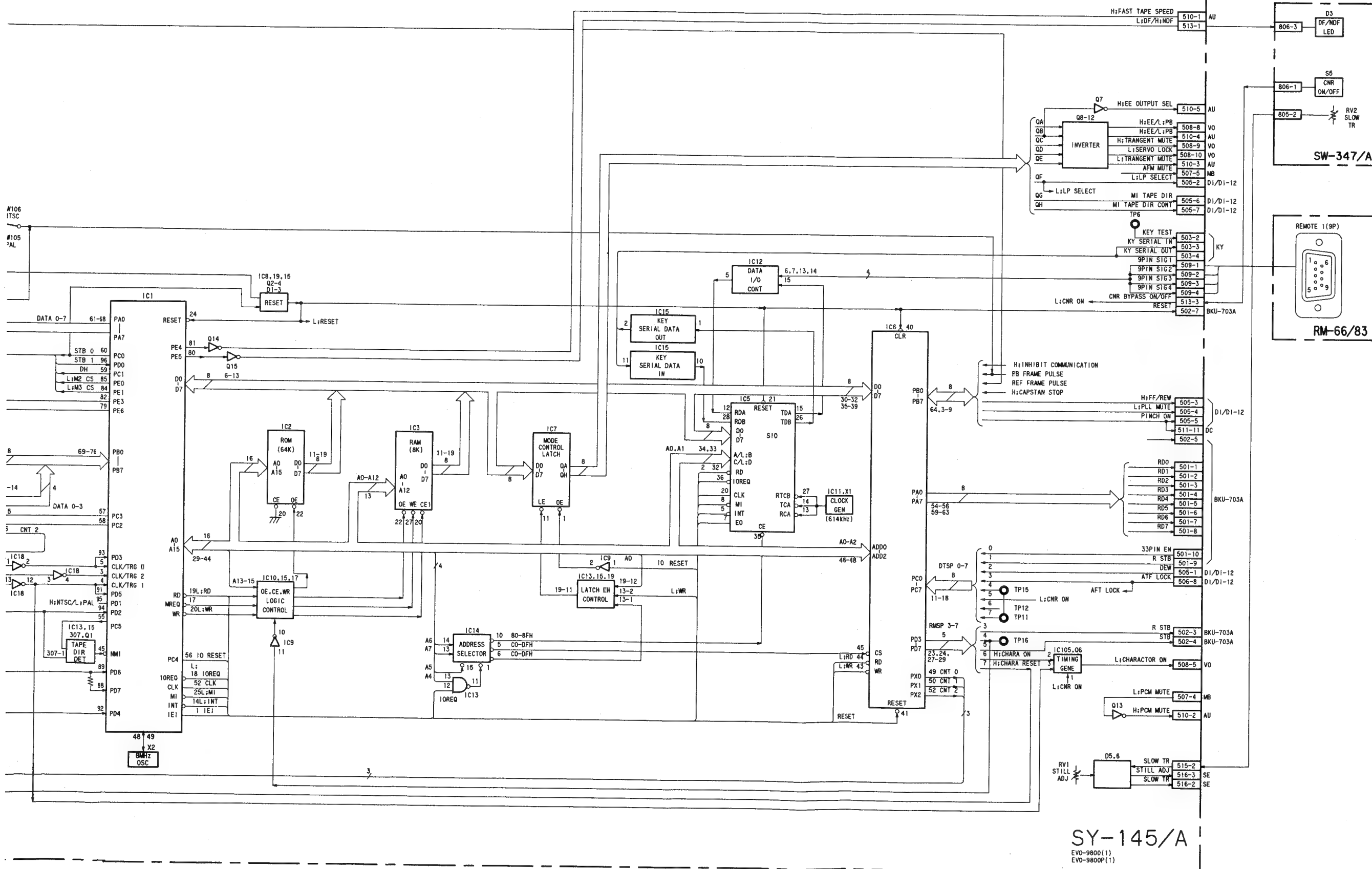




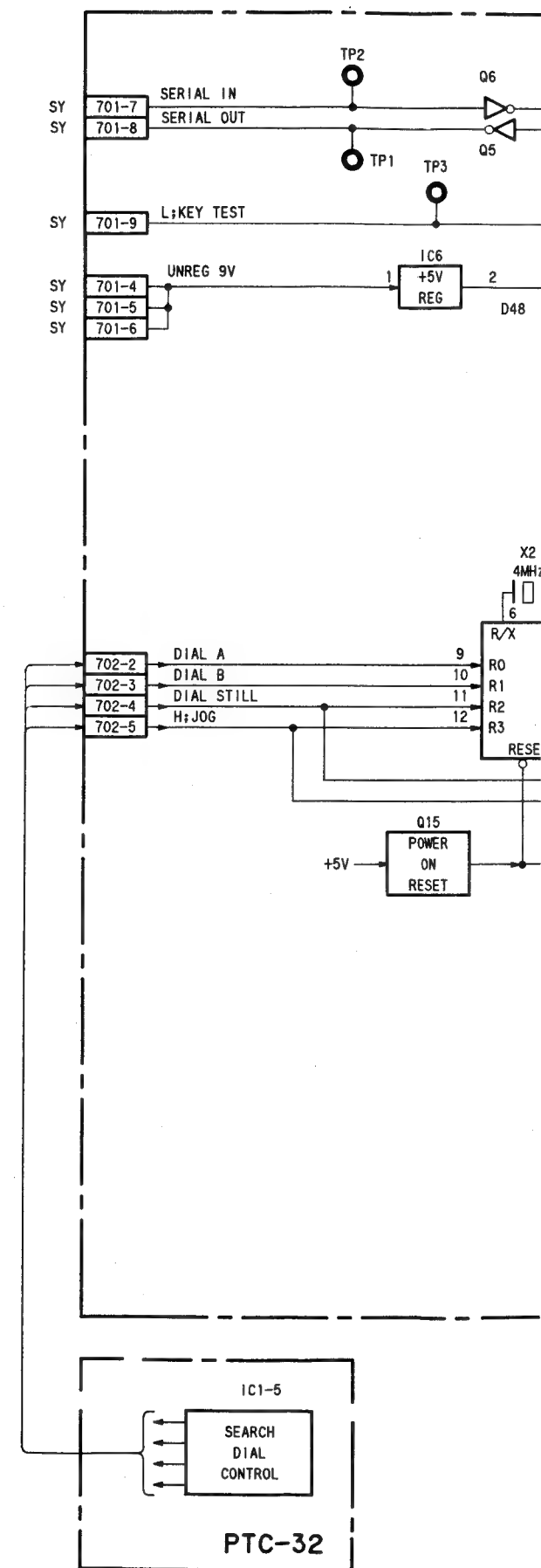
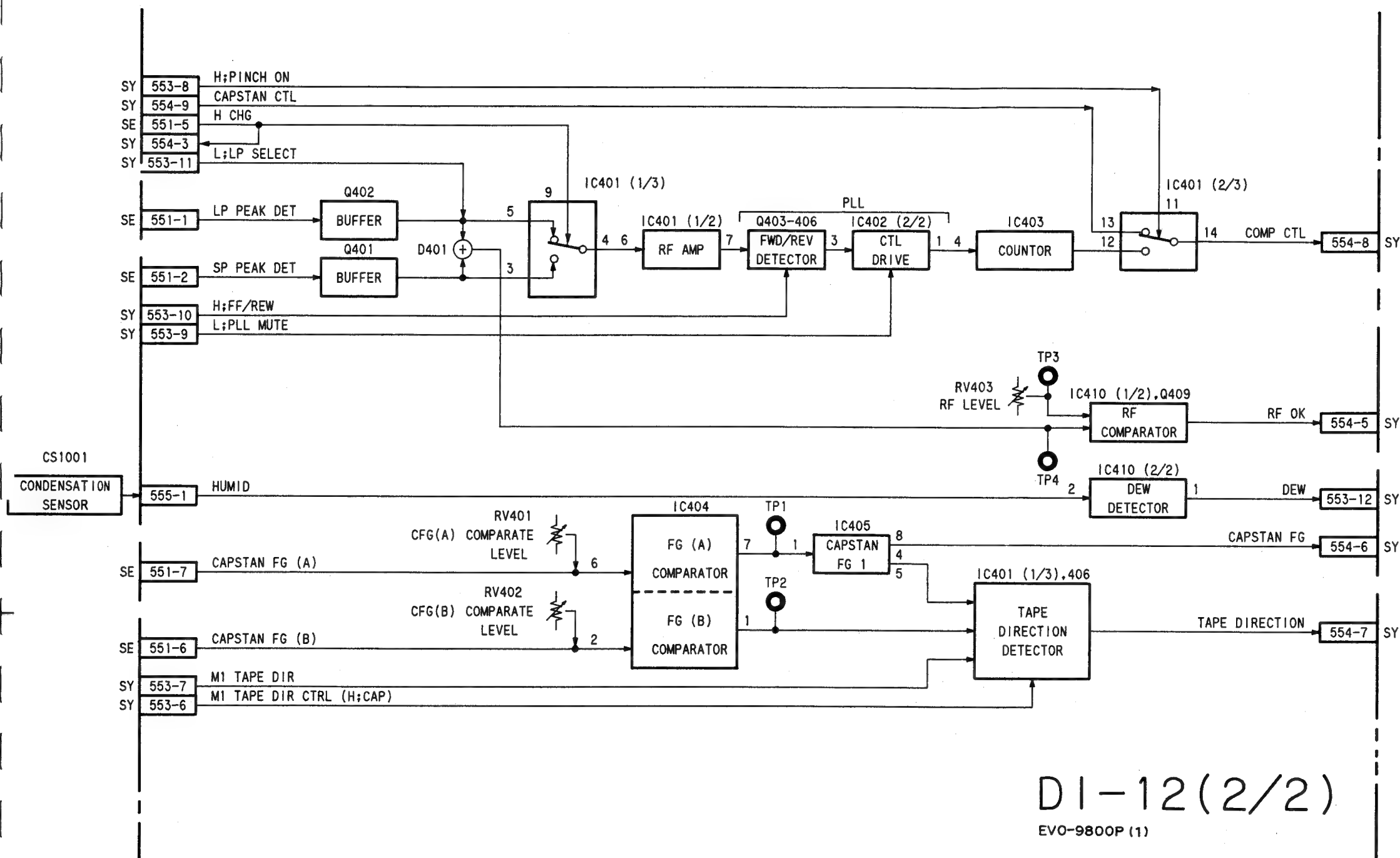


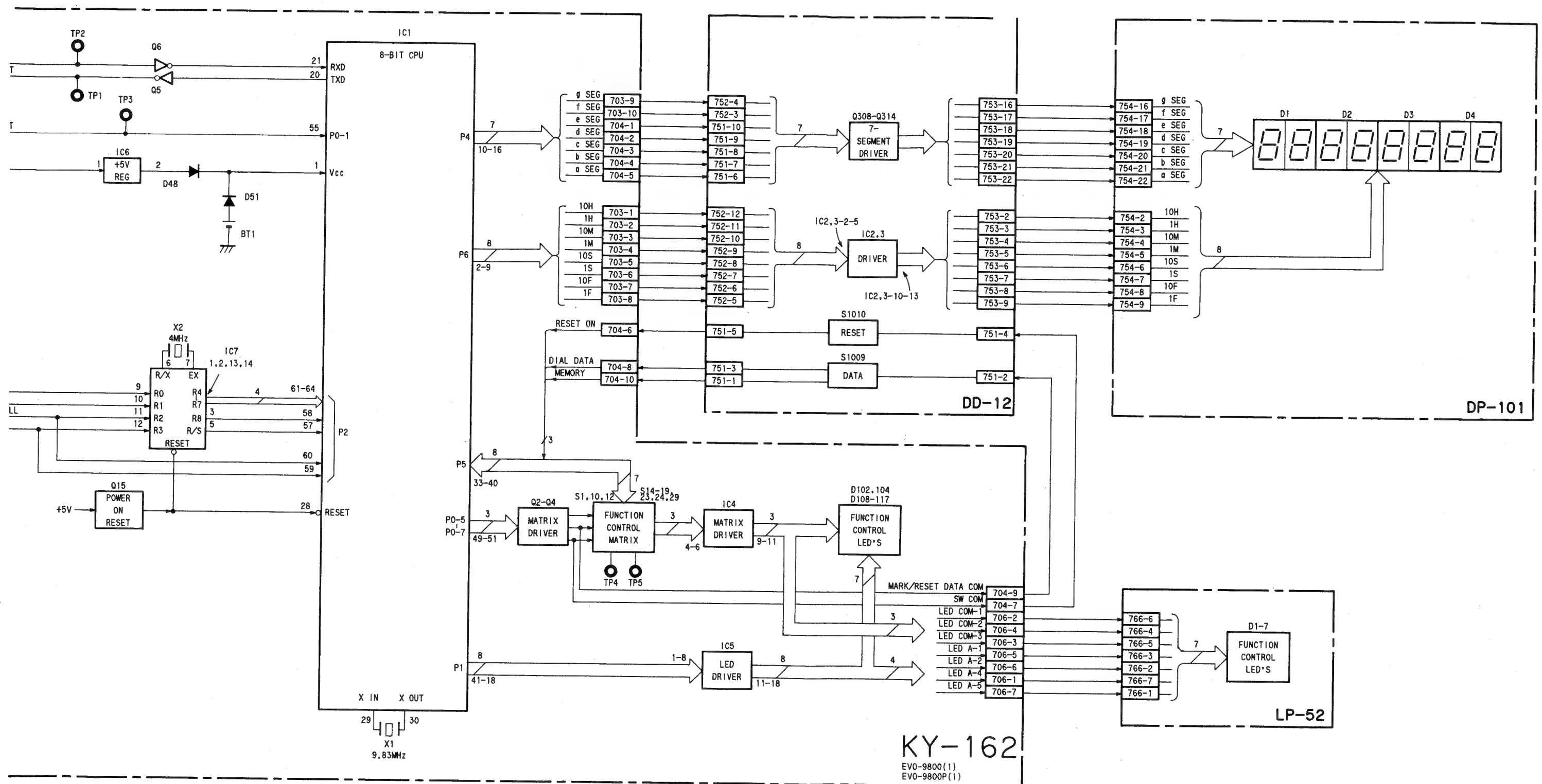
SYSTEM CONTROL





CTL DETECTOR/FUNCTION KEY BOARD





C1-5
ARCH
AL
TROL

IC-32

SECTION 12

SEMICONDUCTOR PIN ASSIGNMENT

ICs, transistors and diodes whoses functions are equivalent are described here. Therefore, incompatible device names may be described together. For parts replacement, refer to the Spare Parts section in this manual.

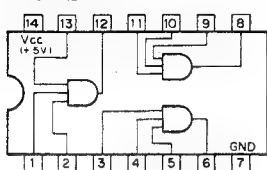
IC	PAGE	IC	PAGE	IC	PAGE
74F11PC	12-3	CXP80116-Q	12-20	SN74HC04N	12-26
74F32PC	12-3			SN74HC08N	12-26
AN607P	12-3	GP1L52	12-18	SN74HC139N	12-27
		GP1L53	12-18	SN74HC14N	12-27
BX-388L	12-3	LA4550	12-18	SN74HC14NS	12-27
BX-389L	12-3	LA5005M	12-20	SN74HC163NS	12-27
BX-3915A	12-3	LB1616M	12-21	SN74HC193N	12-27
		LM2903DQ	12-20	SN74HC20N	12-27
CF77309FR	12-3	LM2903M	12-20	SN74HC32N	12-27
CX20030	12-4			SN74HC373N	12-28
CX20031	12-4	M50747H-601SP	12-22	SN74HC74N	12-28
CX20035	12-5	M5201FP	12-22	SN74HC74NS	12-28
CX20061	12-5	M54516P	12-20		
CX20099	12-5	M54562P	12-22	TA7060AP	12-28
CX20115A	12-5	MB88201H-539N	12-23	TA7357AP	12-28
CX20117	12-6	MB88201H-652M	12-23	TA7733F	12-28
CX22013	12-6	MB88303	12-23	TA7745F	12-28
CX23011	12-7	MB88505H-1115M	12-24	TC4017BP	12-28
CX23012	12-8	MBM27C512-25	12-25	TC4052BPHB	12-29
CX23054	12-9	MC14013BCP	12-23	TC4053BF	12-24
CXA1042M	12-8	MC14053BCP	12-24	TC4053BPHB	12-24
CXA1047M	12-9	MC14053BF	12-24	TC4066BF	12-29
CXA1106M	12-10	MC14538BCP	12-25	TC4069UBP	12-29
CXA1234AR	12-10	MC1496P	12-23	TC4071BP	12-29
CXD1051M	12-11	MC34051P	12-25	TC4538BF	12-25
CXD1077M	12-11			TC4538BP	12-25
CXD1095Q	12-12	NJM2233AM	12-25	TC74HC04F	12-26
CXD1175M	12-12	NJM2238M	12-26	TC74HC123F	12-29
CXD1216M	12-13	NJM4558M	12-25	TL082CP	12-29
CXD1217M	12-13	NJM4562D	12-26	TL431CLP	12-29
CXD1226Q	12-14	NJM4562M	12-26	TMPZ84C011AF	12-30
CXD1227Q	12-16				
CXD1228Q	12-17	RC4560DD	12-26	UPC1037HA	12-29
CXD1229Q	12-15	RC7805FA	12-26	UPC324G2	12-29
CXK1009P	12-17	RC7809FA	12-26	UPC339C	12-30
CXK1206M	12-18	RC78L05A	12-26	UPC358C	12-30
CXK5864BM-12L	12-18	RC78L09A	12-26	UPC358G2	12-30
CXK5864BP-10L	12-18	RC78M05FA	12-26	UPC393G2	12-20
CXP5024H-079Q	12-18			UPC78L05A	12-31
CXP5048H-204Q	12-19	S-8054ALB	12-26	UPD7564	12-31
CXP5048H-205Q	12-19	SN74HC00NS	12-26		

The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

SEMICONDUCTOR INDEX

TRANSISTOR	PAGE	DIODE	PAGE
2SA1115	12-31	10E-2	12-32
2SA1122	12-31	1S2835	12-32
2SA1162	12-31	1S2837	12-32
2SA1175	12-31	1SS119	12-32
2SA1226	12-31	1SS123	12-32
2SA1385	12-31	1SS133	12-32
2SA812	12-31	1SS193	12-32
		1SS196	12-32
2SB649A	12-31	1SS97	12-32
2SB733	12-31	1SS99	12-32
2SB856	12-31	1T33C	12-32
2SC1623	12-31	E10DS2	12-32
2SC1815	12-31		
2SC1826	12-31	FC54M	12-32
2SC2223	12-31		
2SC2714	12-31	GL-5HD5	12-32
2SC2715	12-31	GP-1L52	12-32
2SC2785	12-31	GP-1L53	12-32
2SC2785E	12-31		
2SC2878	12-31	LB-402VK	12-32
2SC3326	12-31	LT-9200D	12-32
2SC3735	12-31	LT-9200H	12-32
2SC3327	12-31		
2SC403SP	12-31	MA159	12-32
2SD669A	12-31	RD??ESB?	12-32
DTA114EK	12-31	TLG124A	12-33
DTA124EK	12-31	TLG256	12-33
DTA124XS	12-32	TLUG144	12-33
DTA143XS	12-32	TLUG154	12-33
DTA144EK	12-31	TLUY144	12-33
DTA144ES	12-32	TLY256	12-33
DTC114EK	12-32		
DTC124EK	12-32	U05E	12-33
DTC144EK	12-32		
DTC144ES	12-32		
FMS2	12-32		
FMW1	12-32		
NJL7141E	12-32		

74F11PC (FSC)

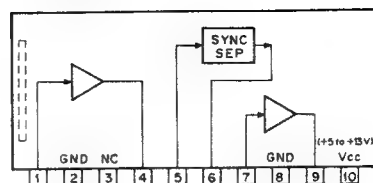
TTL 3-INPUT POSITIVE-AND GATE
— TOP VIEW —

$$Y = A \cdot B \cdot C = \overline{\overline{A} + \overline{B} + \overline{C}}$$

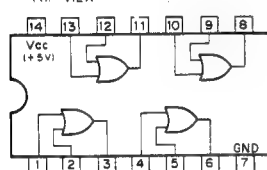
A	B	C	Y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

0: LOW LEVEL
1: HIGH LEVEL

BX3915A (SONY)

SYNC SEPARATOR
— PRINTED SIDE —

74F32PC (FSC)

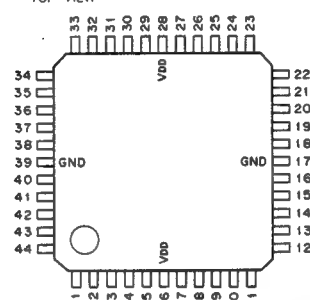
TTL 2-INPUT POSITIVE-OR GATE
— TOP VIEW —

$$Y = A + B = \overline{\overline{A} \cdot \overline{B}}$$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0: LOW LEVEL
1: HIGH LEVEL

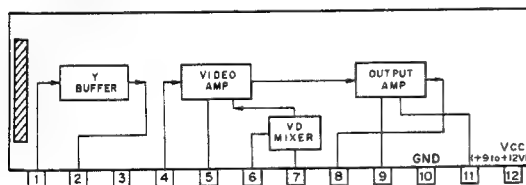
CF77309FR (TI)

C-MOS TIMING GENERATOR FOR 8mm VTR ADDRESS SYSTEM
— TOP VIEW —(V_{DD} = +5V)

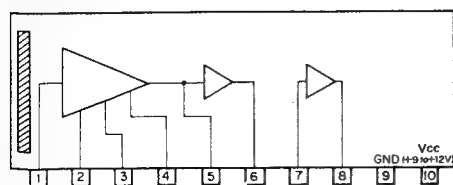
AN607P (MATSUSHITA)

WIDE BAND AMPLIFIER
— PRINTED SIDE VIEW —1: OUTPUT
2: V_{CC} (+12V)
3: INPUT
4: GND

BX388L (ROHM)

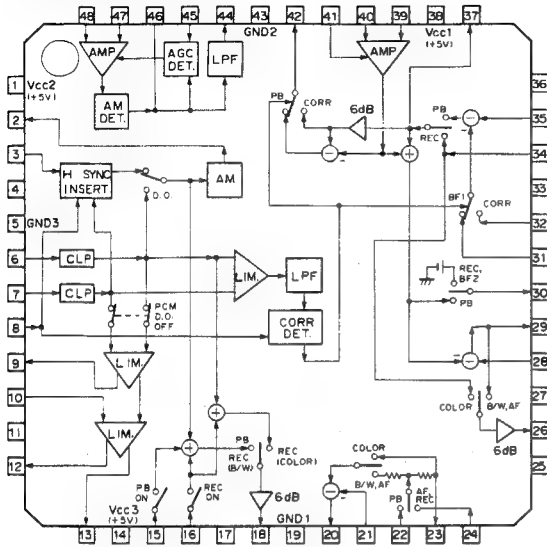
VIDEO AMP/VD MIXER
— PRINTED SIDE —

BX389L (ROHM)

VIDEO AMPLIFIER
— PRINTED SIDE —

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I	IEAR	12	I	CSMT	23	O	LCLK	34	I	RAMP
2	O	SIEAR	13	I	CRCMON1	24	O	SW POS	35	O	S RAMP
3	I	RFMDZ	14	I	FMCK	25	I	CAM/DECK	36	I	RAREA
4	O	S RFMD	15	I	P1/P2	26	I	MODE	37	O	S RARE
5	I	RFAR	16	I	AUTO	27	I	WRITE	38	I	DRSWP
6	—	V _{DD}	17	—	GND	28	—	V _{DD}	39	—	GND
7	O	S RFAR	18	I	MCLK1	29	I	RESET	40	O	S DRSWP
8	I	FERA	19	O	MCLK2	30	I	RFSWP	41	I	MDAR
9	O	S FERA	20	I	SREF	31	O	OUT CNT	42	O	S MDAR
10	I	FERS	21	O	PCO	32	O	SET 1	43	I	TEST 1
11	O	S FERS	22	I	NTSC/PAL	33	O	SET1010	44	I	TEST 2

CX20031 (SONY) FLAT PACKAGE
Y/C SEPARATION COMB FILTER
- TOP VIEW -

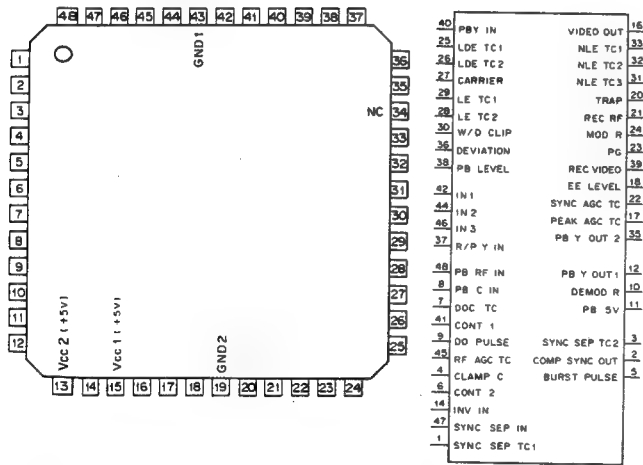


PIN No.	PIN NAME	PIN No.	PIN NAME	PIN No.	PIN NAME
1	Vcc2	17	DOP IN	33	BF2
2	AM OUT	18	Y OUT2	34	REC VIDEO IN
3	HD IN	19	GND1	35	PB CHROMA IN
4	XTAL	20	Y OUT1	36	PB SV IN
5	GND3	21	PB MIX IN2	37	CDL OUT
6	YD IN	22	PB Y IN	38	Vcc1
7	Y IN	23	FSC TRAP	39	CDL1 IN
8	CORR ADJ	24	REC Y IN	40	CDL2 IN
9	Y-YD OUT	25	ACK IN	41	CD ADJ
10	Y-YD IN	26	REC Y OUT	42	C OUT
11	PCM IN	27	BF1	43	GND2
12	LIM OUT2	28	Y BPF IN	44	YD OUT
13	LIM OUT1	29	Y OUT3	45	YD ADJ
14	Vcc3	30	CT OUT	46	PEAK HOLD
15	PB MIX IN1	31	CT IN2	47	YDL1 IN
16	REC MIX IN	32	CT IN1	48	YDL2 IN

ACK ; ACKNOWLEDGMENT
ADJ ; ADJUSTMENT
AF ; AFTER RECODING
AGC ; AUTOMATIC GAIN CONTROL
AM ; AMPLITUDE MODULATION
AMP ; AMPLIFIER
BF ; BURST FLAG
BPF ; BAND PASS FILTER
C ; CHROMA
CD ; DEFERED C
CDL ; C DELAY LINE
CLP ; CLAMP
CORR ; CORRELATION
CT ; C CROSSTALK
DET ; DETECTOR
DOP ; DROP-OUT
D.O ; DROP-OUT
FSC ; FREQUENCY OF SUB-CARRIER

GND ; GROUND
H ; HORIZONTAL
HD ; H DRIVE PULSE
IN ; INPUT
LIM ; LIMITER
LPF ; LOW PASS FILTER
MIX ; MIXER
OUT ; OUTPUT
PB ; PLAYBACK
PCM ; PULSE CODE MODULATION
REC ; RECORDING
SYNC ; SYNCHRONIZATION
Vcc ; POWER
XTAL ; CRYSTAL
Y ; LUMINANCE
YD ; DEFERRED Y
YDL ; Y DELAY LINE

CX20030 (SONY) FLAT PACKAGE
VIDEO Y SIGNAL PROCESSOR
- TOP VIEW -



INPUT
BURST PULSE : BURST PULSE INPUT
CARRIER : FM MODULATOR CARRIER CONTROL INPUT
CLAMP C : EXTERNAL CAPACITOR FOR CLAMPING INPUT
CONT 1 : INTERNAL SWITCH CONTROL INPUT
CONT 2 : MUTING AND VD-ADD CONTROL INPUT
DEMOD R : EXTERNAL RESISTOR FOR FM DEMODULATOR INPUT
DEVIATION : DEVIATION CONTROL INPUT
DOC TC : EXTERNAL CAPACITOR FOR DROPOUT DETECTION INPUT
EE LEVEL : SYNC AGC CONTROL INPUT
IN 1 - IN 3 : RECORDING VIDEO SIGNAL INPUTS
INV IN : INVERTING INPUT FOR VIDEO CIRCUIT
LDE TC1,TC2 : EXTERNAL RESISTOR FOR LINEAR DE-EMPHASIS INPUTS
LE TC1,TC2 : EXTERNAL CR FOR LINEAR EMPHASIS INPUTS
MOD R : EXTERNAL RESISTOR FOR FM MODULATOR INPUT
NLE TC1 - NLE TC3 : EXTERNAL CAPACITOR FOR NON-LINEAR EMPHASIS INPUTS

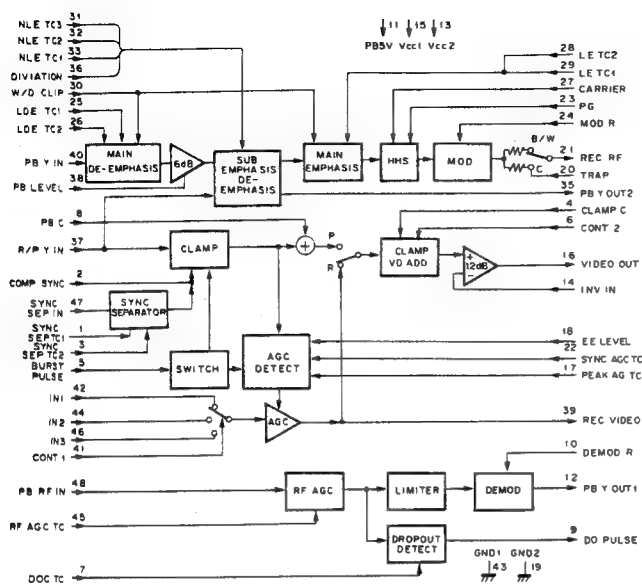
PB 5V : POWER FOR PLAYBACK SYSTEM INPUT
PB C : PB CHROMA INPUT AND M/C CONTROL INPUT
PB LEVEL : PB Y OUT2 SIGNAL CONTROL INPUT
PB RF IN : PB RF (FM) INPUT
PB Y IN : PB Y SIGNAL FOR DE-EMPHASIS INPUT
PEAK AGC TC : EXTERNAL CR INPUT FOR PEAK AGC
PG : PG (30Hz) SIGNAL INPUT
RF AGC TC : EXTERNAL CR FOR RF AGC INPUT
R/P Y IN : Y SIGNAL FOR CLAMPING INPUT
SYNC AGC TC : EXTERNAL CR INPUT FOR SYNC AGC
SYNC SEP IN : SYNC SEPARATION SIGNAL INPUT
SYNC SEP TC1,TC2 : EXTERNAL CR INPUT FOR SYNC SEPARATION

TRAP : TRAP INPUT
W/D CLIP : LINEAR EMPHASIS AND W/D CLIP CONTROL INPUT

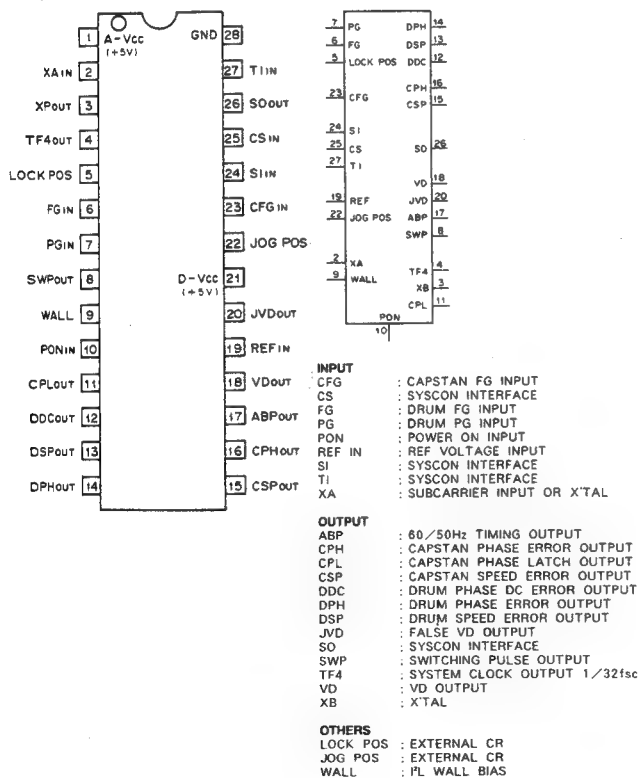
OUTPUT
COMP SYNC : COMPOSITE SYNC OUTPUT
DO PULSE : DROPOUT PULSE OUTPUT
PB Y OUT1 : FREQUENCY DEMODULATOR OUTPUT
PB Y OUT2 : PB Y OUTPUT
REC RF : Y-FM SIGNAL OUTPUT
REC VIDEO : AMPLIFIED Y SIGNAL OUTPUT
VIDEO OUT : VIDEO OUTPUT

PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	I	SYNC SEP TC1	17	I	PEAK AGC TC	33	I	NLE TC1
2	O	COMP SYNC	18	I	EE LEVEL	34	-	NC
3	I	SYNC SEP TC2	19	-	GND2	35	O	PB Y OUT2
4	I	CLAMP C	20	I	TRAP	36	I	DEVIATION
5	I	BURST PULSE	21	O	REC RF	37	I	R/P Y IN
6	I	CONT2	22	I	SYNC AGC TC	38	I	PB LEVEL
7	I	DOC TC	23	I	PG	39	O	REC VIDEO
8	I	PB C	24	I	MOD R	40	I	PB Y IN
9	O	DO PULSE	25	I	LDE TC1	41	I	CONT1
10	I	DEMOD R	26	I	LDE TC2	42	I	IN1
11	I	PB 5V	27	I	CARRIER	43	-	GND1
12	O	PB Y OUT1	28	I	LE TC2	44	I	IN2
13	-	Vcc2	29	I	LE TC1	45	I	RF AGC TC
14	I	INV IN	30	I	W/D CLIP	46	I	IN3
15	-	Vcc1	31	I	NLE TC3	47	I	SYNC SEP IN
16	O	VIDEO OUT	32	I	NLE TC2	48	I	PB RF IN

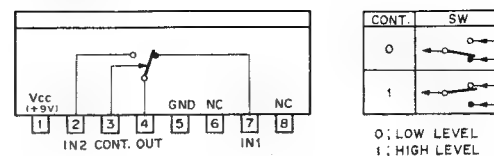
(V_{DD} = +5V)



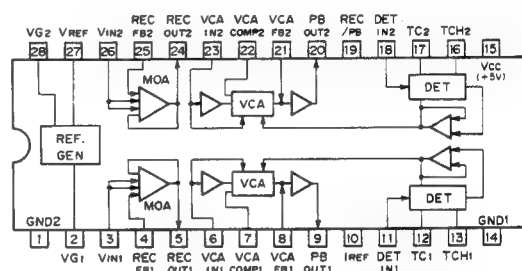
CX20035 (SONY) FLAT PACKAGE
DRUM/CAPSTAN SERVO CONTROLLER
- TOP VIEW -



CX20061 (SONY)
ANALOG SWITCH
- SIDE VIEW -

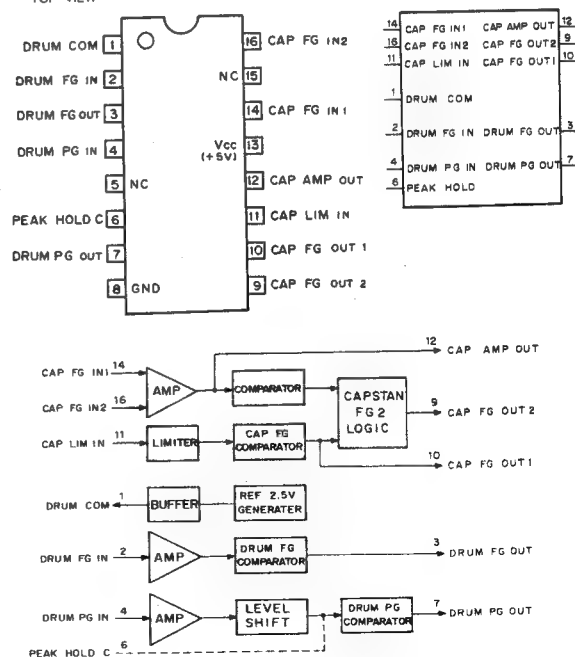


CX20099 (SONY) FLAT PACKAGE
VOLTAGE CONTROLLED AMP/DETECTOR/MAIN OPERATIONAL AMP
- TOP VIEW -

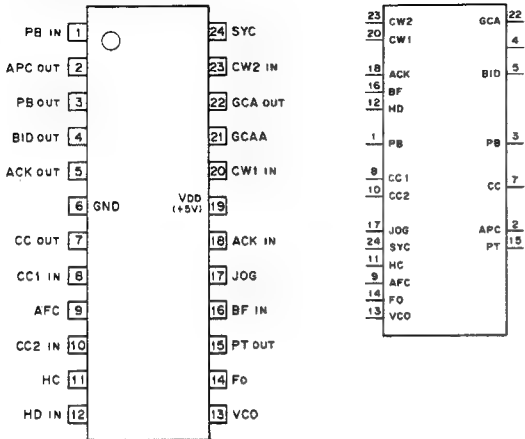


DET : DETECTOR
TC : TIME CONSTANT
TCH : TIME CONSTANT HOLD
VCA : VOLTAGE CONTROLLED AMP

CX20115A (SONY) FLAT PACKAGE
MOTOR SENSE AMP
- TOP VIEW -



CX20117 (SONY) FLAT PACKAGE
C-MOS PAL-COLOR ALIGNMENT COMPENSATOR
— TOP VIEW —



INPUT

ACK : ACK CHROMA SIGNAL
BF : BURST FLAG
CW1 : 4.43 MHz (REF - 90°)
CW2 : REF 4.43 MHz
HD : HORIZONTAL DRIVE
PB : PLAYBACK CHROMA SIGNAL
CC1 : CONVERTED CARRIER (3.70 MHz)
CC2 : CONVERTED CARRIER (5.17 MHz)

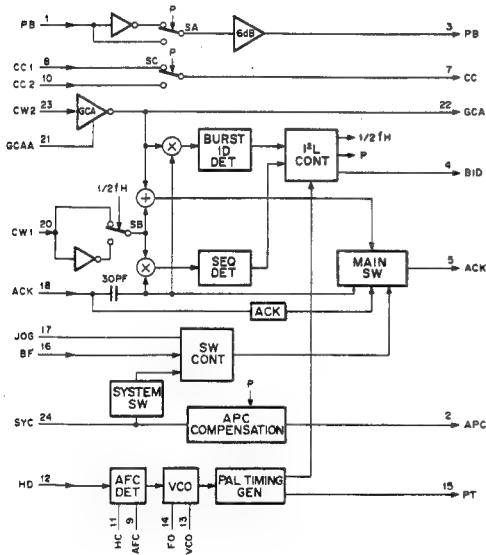
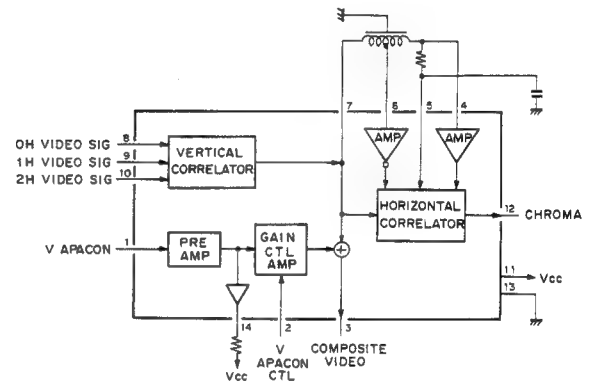
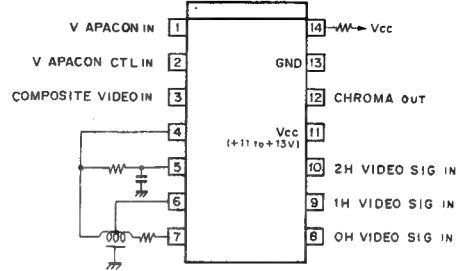
OTHERS

AFC : AFC LPF
GCAA : REF AMP GAIN ADJ
F₀ : VCO FREQUENCY ADJ
HC : HOLD CAPACITOR
JOG : REC/PB/JOG SELECT
SYN : SYSTEM CONTROL
VCO : VCO CAPACITOR

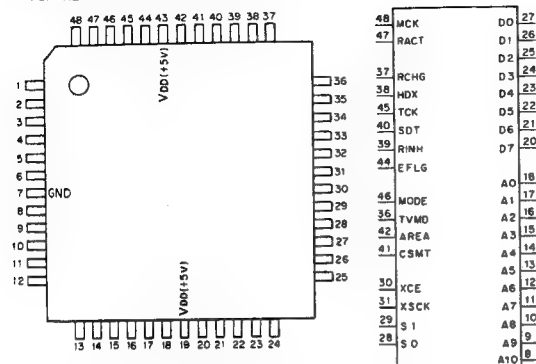
OUTPUT

ACK : ACK CHROMA SIGNAL
APC : APC COMPENSATION
BID : BURST ID
GCA : REF (4.43 MHz) AMP
PB : PLAYBACK CHROMA SIGNAL
PT : PAL TIMING
CC : CONDECTED CARRIER OTHERS

CX22013 (SONY)
DYNAMIC COMB FILTER
— TOP VIEW —



CX23011 (SONY) FLAT PACKAGE
C-MOS PCM AUDIO SIGNAL PROCESSOR
- TOP VIEW -



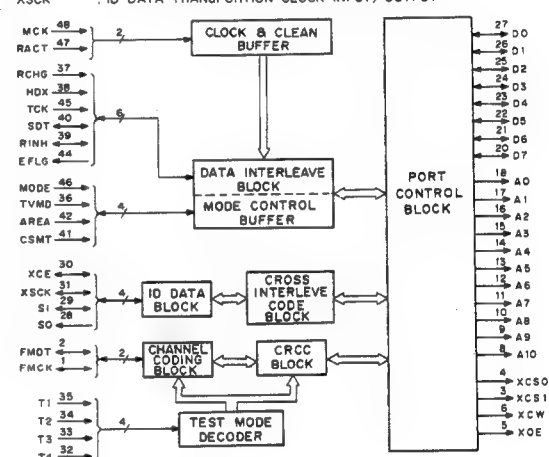
(V_{DD} = +5V)

PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	I/O	FMCK	25	I/O	D2
2	I/O	FMDT	26	I/O	D1
3	O	XCS1	27	I/O	D0
4	O	XCS0	28	O	S0
5	O	XOE	29	I/O	S1
6	O	XW	30	I/O	XCE
7	-	GND	31	I/O	XSCK
8	O	A10	32	I	T4
9	O	A9	33	I	T3
10	O	A8	34	I	T2
11	O	A7	35	I	T1
12	O	A6	36	I	TVMD
13	O	A5	37	I	RCHG
14	O	A4	38	I	HDH
15	O	A3	39	I/O	RINH
16	O	A2	40	I/O	SDT
17	O	A1	41	I/O	CSMT
18	O	A0	42	I	AREA
19	-	V _{DD}	43	-	V _{DD}
20	I/O	D7	44	O	EFLG
21	I/O	D6	45	I	TCK
22	I/O	D5	46	I	MODE
23	I/O	D4	47	I	RACT
24	I/O	D3	48	I	MCK

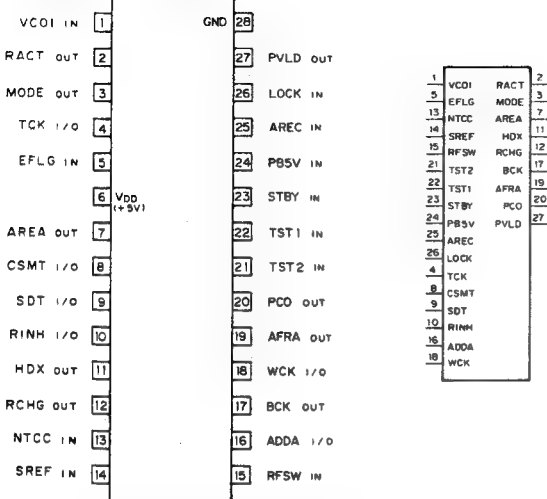
INPUT
 AREA : PCM AREA SIGNAL INPUT TERMINAL
 HDX : TIMING CLOCK TO TRANSPORT DATA TO CX23012
 MCK : NTSC/CCIR CLOCK INPUT
 MODE : REC/PB CONTROL SIGNAL INPUT TERMINAL OF ALL PCM
 RACT : START/STOP CONTROL INPUT OF CX23012
 RCHG : SELECT TWO 16K-RAM USING ON TBC OR ERROR CORRECTION
 TCK : TIMING CLOCK TO TRANSPORT DATA TO CX23012
 TVMD : NTSC/CCIR STATUS SIGNAL INPUT
 T1 - T4 : TEST MODE INPUTS

OUTPUT
 A0 - A10 : RAM ADDRESS OUTPUTS
 EFLG : OUTPUT HIGH LEVEL IN CASE OF ERROR CORRECTION DISABLE
 S0 : ID DATA OUTPUT
 XCS0, XCS1 : TWO 16K-RAM SELECT CONTROL OUTPUTS
 XOE : 16K-RAM CONTROL OUTPUT
 XW : 16K-RAM WRITING OUTPUT

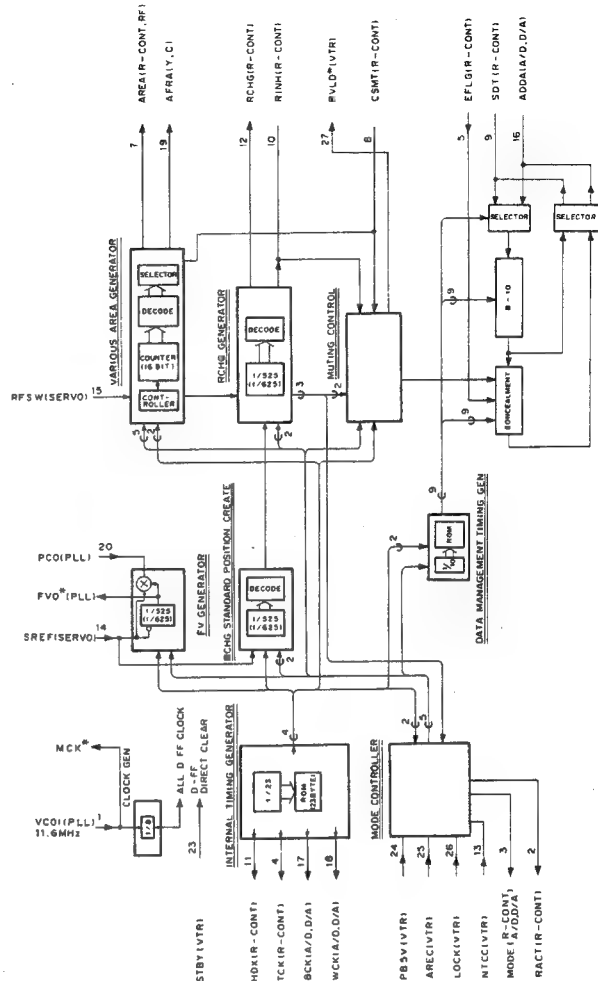
INPUT/OUTPUT
 CSMT : (PB) OUTPUT HIGH LEVEL AT MUTE MODE ON CX23012
 D0 - D7 : (REC) INPUT DATA BLOCK WRITING ON HIGH LEVEL
 FMCK : FM CLOCK INPUT/OUTPUT
 FMDT : FM DATA INPUT/OUTPUT
 RINH : (PB) PROHIBIT TO TURN OVER RCHG SIGNAL
 SDT : (REC) PROHIBIT TO WRITE A/D DATA TO 16K-RAM
 SI : 8 BIT SERIAL DATA TRANSFER TERMINAL
 XCE : ID DATA INPUT/OUTPUT
 XSCK : ID DATA TRANSPORTATION SIGNAL INPUT/OUTPUT
 XSCK : ID DATA TRANSPORTATION CLOCK INPUT/OUTPUT



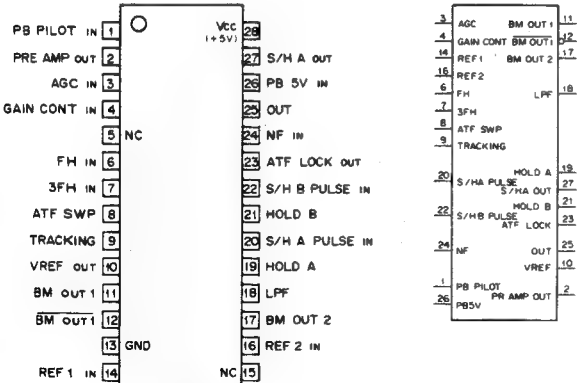
CX23012 (SONY) FLAT PACKAGE
C-MOS PCM AUDIO SIGNAL PROCESSOR
— TOP VIEW —



ADDA ; TRANSFER TERMINAL OF 10 BIT SERIAL DATA
AFRA ; AREA SIGNAL OUTPUT TERMINAL AT AFTER REC
AREA ; PCM AREA SIGNAL OUTPUT TERMINAL
AREC ; AFTER REC CONTROL SIGNAL
CSMT ; (PB) OUTPUT "H" LEVEL AT MUTE MODE ON CX23011
(REC) OUTPUT DATA BLOCK WRITING ON "H" LEVEL
EFLG ; OUTPUT "H" LEVEL IN CASE OF ERROR CORRECTION DISABLE
HDX ; TIMING CLOCK TO TRANSPORT DATA TO CX23011
LOCK ; APPOINT TO START OR STOP PCM SYSTEM
MODE ; REC/PB CONTROL SIGNAL OUTPUT TERMINAL OF ALL PCM
NTCC ; "H" ; NTSC MODE/"L" ; CCIR MODE
PBSV ; REC/PB CONTROL SIGNAL
PCO ; COMPARE fv AND SREF'S PHASE
PVLD ; INDICATE PCM DATA ON THE TAPE
RACT ; START/STOP CONTROL OUTPUT OF CX23011
RCMG ; SELECT TWO 16K RAM USING ON TBC OR ERROR CORRECTION
RFSW ; RE SWITCHING PULSE INPUT TERMINAL
RINH ; (PB) PROHIBIT TO TURN OVER RCMG SIGNAL
(REC) PROHIBIT TO WRITE A/D DATA TO 16K-RAM
SDT ; 8 BIT SERIAL DATA TRANSFER TERMINAL
SREF ; TIMING SIGNAL INPUT TERMINAL OF PCM
STBY ; INITIALIZE AND POWER SAVE MODE TERMINAL OF PCM
TCK ; TIMING CLOCK TO TRANSPORT DATA TO CX23011
TST1/2 ; TEST MODE CONTROL TERMINAL 1/2
VCOI ; CLOCK INPUT TERMINAL
WCK ; TIMING CLOCK TO TRANSPORT DATA TO A/D, DIA CONVERTER



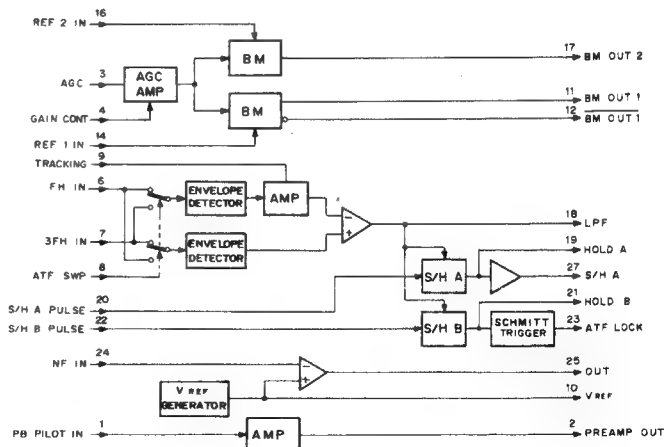
CXA1042M (SONY) FLAT PACKAGE
AUTOMATIC TRACKING SENSOR
— TOP VIEW —



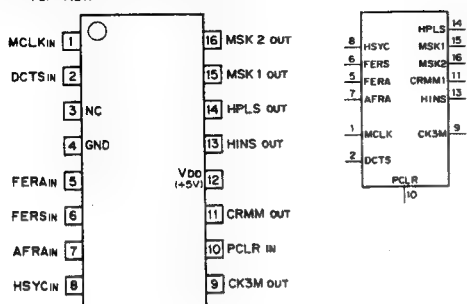
INPUT
3FH IN : 47KHz BPF SIGNAL INPUT
AGC IN : AGC INPUT
FH IN : 16KHz BPF SIGNAL INPUT
GAIN CONT : AGC CONTROL INPUT
NF IN : OP AMP NEGATIVE PHASE INPUT
PB PILOT IN : REC/PB CHANGE SIGNAL INPUT
PB PILOT IN : PB PILOT SIGNAL INPUT
REF 1 IN : MULTIPLIER'S REF PILOT SIGNAL INPUT
REF 2 IN : MULTIPLIER'S REF PILOT SIGNAL INPUT
S/H A PULSE : S/H TIMING SIGNAL INPUT

OUTPUT
ATF LOCK : LOCK DETECT SIGNAL OUTPUT
BM OUT1 : MULTIPLIER'S NEGATIVE PHASE OUTPUT
BM OUT1 : MULTIPLIER'S POSITIVE PHASE OUTPUT
BM OUT2 : MULTIPLIER'S POSITIVE PHASE OUTPUT
OUT : OP AMP POSITIVE PHASE OUTPUT
PRE AMP OUT : PRE AMP OUTPUT
S/H A OUT : SAMPLE HOLD A PULSE SIGNAL OUTPUT
VREF : REF VOLTAGE OUTPUT

OTHERS
ATF SWP : SUBTRACTOR'S POLARITY CHANGE
HOLD A, B : S/H PULSE TIME CONSTANT HOLD
LPF : ENVELOPE DETECTION
TRACKING : TRACKING ADJUSTMENT

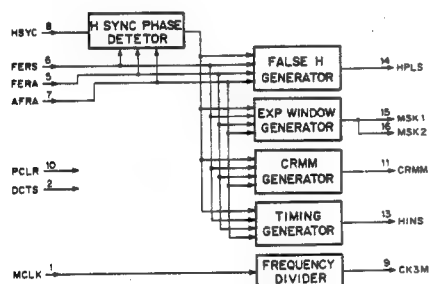


CXD1051M (SONY) FLAT PACKAGE
C-MOS VIDEO PULSE GENERATOR
- TOP VIEW -

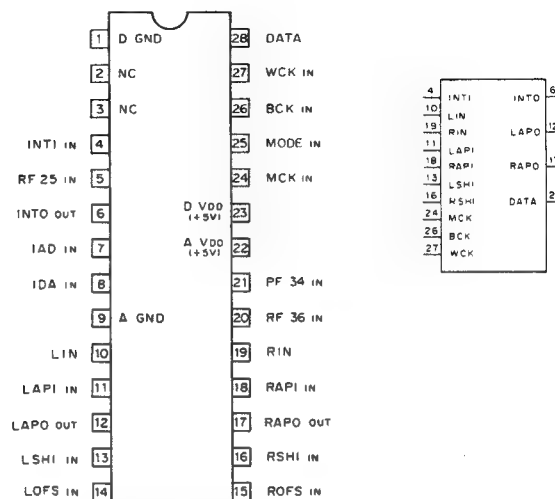


INPUT
AFRA : AFTER REC MASK AREA INPUT
DCTS : TEST PIN
FERA : FLYING ERASE MASK AREA INPUT
FERS : FLYING ERASE RUN AREA INPUT
HSYC : HORIZONTAL SYNC INPUT
MCLK : CLOCK INPUT
PCLR : POWER ON/CLEAR INPUT

OUTPUT
CK3M : MCLK/4 CLOCK OUTPUT
CRMM : CHROMA MUTE OUTPUT
HINS : FALSE HD TIMING OUTPUT
HPLS : FALSE HD PULSE OUTPUT
MSK1 - MSK2 : VIDEO MASKING OUTPUTS

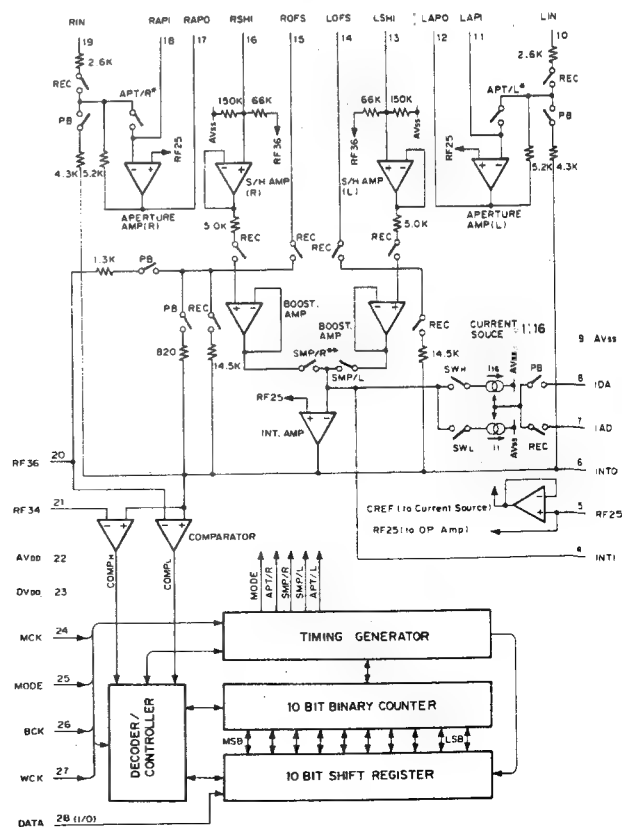


CXD1077M (SONY) MINI FLAT PACKAGE
C-MOS A/D, D/A CONVERTER FOR PCM AUDIO
- TOP VIEW -

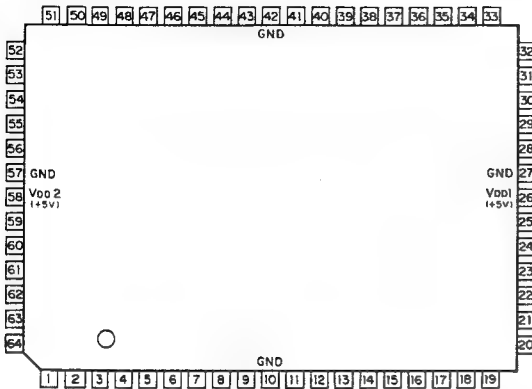


BCK : BIT CLOCK INPUT TERMINAL
DATA : DATA INPUT/OUTPUT TERMINAL
IAD : INTEGRATION CURRENT SET UP TERMINAL (REC MODE)
IDA : INTEGRATION CURRENT SET UP TERMINAL (PB MODE)
INT1 : INTEGRATION AMP INPUT TERMINAL
INTO : INTEGRATION AMP OUTPUT TERMINAL
LAPO : APERTURE AMP INPUT TERMINAL (L)
LAPI : APERTURE AMP OUTPUT TERMINAL (L)
LIN : ANALOG SIGNAL INPUT TERMINAL (L)
LOFS : OFFSET CORRECT TERMINAL (L)
LSHI : SAMPLE & HOLD AMP (L) INPUT TERMINAL
MCK : MASTER CLOCK INPUT TERMINAL
MODE : REC MODE/PB MODE SET UP TERMINAL
RAPO : APERTURE AMP OUTPUT TERMINAL (R)
RAPI : APERTURE AMP INPUT TERMINAL (R)
RIN : ANALOG SIGNAL INPUT TERMINAL (R)
RF25 : IMAGE FOCUS ELECTRIC POTENTIAL SET UP TERMINAL
RF34 : HIGHER RANK COMPARATOR VOLTAGE OR (REC) LOW RANK COMPARATOR VOLTAGE OR (PB) DISCHARGE VOLTAGE SET UP TERMINAL
ROFS : OFFSET CORRECT TERMINAL (R)
RSHI : SAMPLE & HOLD AMP (R) INPUT TERMINAL
WCK : WORD CLOCK INPUT TERMINAL

* APT/L/R (REC MODE) (PB MODE)
W SMP/R EVER ON SAMPLING APERTURE DISCHARGE



CXD1095Q (SONY) FLAT PACKAGE
C-MOS I/O PORT EXPANDER
— TOP VIEW —

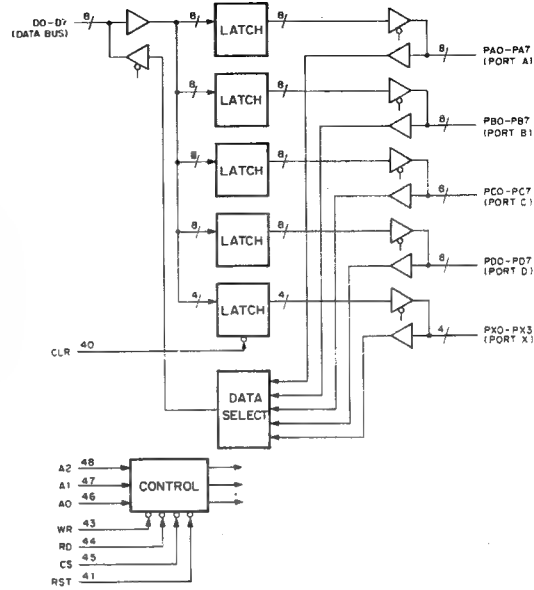


PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL
1			NC	17	O	O	PC6	33			NC	49	O	O	PX0
2			NC	18	O	O	PC7	34			NC	50	O	O	PX1
3	O	O	PB1	19			NC	35	O	O	D3	51			NC
4	O	O	PB2	20	O	O	PD0	36	O	O	D4	52	O	O	PX2
5	O	O	PB3	21	O	O	PD1	37	O	O	D5	53	O	O	PX3
6	O	O	PB4	22	O	O	PD2	38	O	O	D6	54	O	O	PA0
7	O	O	PB5	23	O	O	PD3	39	O	O	D7	55	O	O	PA1
8	O	O	PB6	24	O	O	PD4	40	O		CLR	56	O	O	PA2
9	O	O	PB7	25			GND	41	O		RST	57			GND
10			GND	26			VDD(+5V)	42			GND	58	O		VDD(+5V)
11	O	O	PC0	27	O	O	PD5	43	O		WR	59	O	O	PA3
12	O	O	PC1	28	O	O	PD6	44	O		RD	60	O	O	PA4
13	O	O	PC2	29	O	O	PD7	45	O		CS	61	O	O	PA5
14	O	O	PC3	30	O	O	D0	46	O		A0	62	O	O	PA6
15	O	O	PC4	31	O	O	D1	47	O		A1	63	O	O	PA7
16	O	O	PC5	32	O	O	D2	48	O		A2	64	O	O	PB0

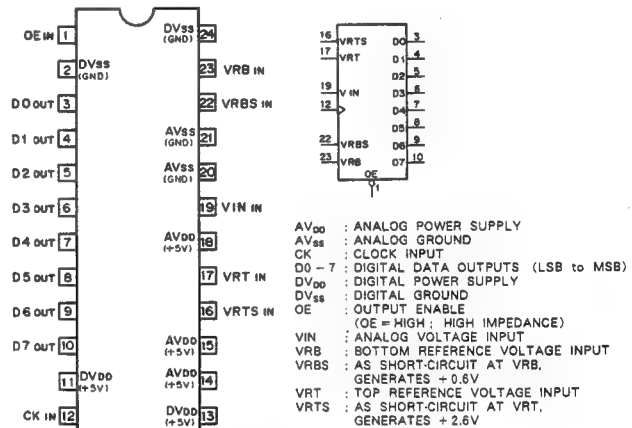
PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL
1			NC	17	O	O	PC6	33			NC	49	O	O	PX0
2			NC	18	O	O	PC7	34			NC	50	O	O	PX1
3	O	O	PB1	19			NC	35	O	O	D3	51			NC
4	O	O	PB2	20	O	O	PD0	36	O	O	D4	52	O	O	PX2
5	O	O	PB3	21	O	O	PD1	37	O	O	D5	53	O	O	PX3
6	O	O	PB4	22	O	O	PD2	38	O	O	D6	54	O	O	PA0
7	O	O	PB5	23	O	O	PD3	39	O	O	D7	55	O	O	PA1
8	O	O	PB6	24	O	O	PD4	40	O		CLR	56	O	O	PA2
9	O	O	PB7	25			GND	41	O		RST	57			GND
10			GND	26			VDD(+5V)	42			GND	58	O		VDD(+5V)
11	O	O	PC0	27	O	O	PD5	43	O		WR	59	O	O	PA3
12	O	O	PC1	28	O	O	PD6	44	O		RD	60	O	O	PA4
13	O	O	PC2	29	O	O	PD7	45	O		CS	61	O	O	PA5
14	O	O	PC3	30	O	O	D0	46	O		A0	62	O	O	PA6
15	O	O	PC4	31	O	O	D1	47	O		A1	63	O	O	PA7
16	O	O	PC5	32	O	O	D2	48	O		A2	64	O	O	PB0

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

DO-D7: DATA BUS INPUTS/OUTPUTS
CS: CHIP SELECT INPUT
RD: READ STROBE INPUT
WR: WRITE STROBE INPUT
AO-A2: ADDRESS INPUT
RST: RESET INPUT
CLR: CLEAR INPUT
PA0-PA7: PORT A INPUTS/OUTPUTS
PB0-PB7: PORT B INPUTS/OUTPUTS
PC0-PC7: PORT C INPUTS/OUTPUTS
PD0-PD7: PORT D INPUTS/OUTPUTS
PX0-PX3: PORT X INPUTS/OUTPUTS



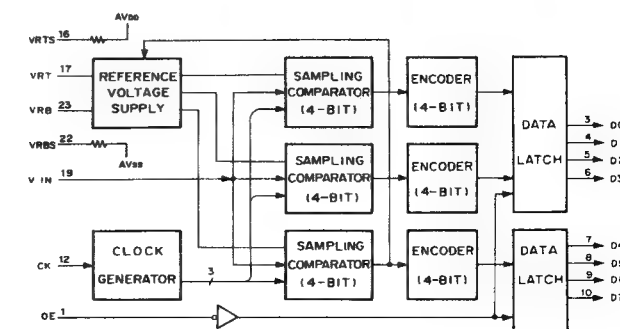
CXD1175M (SONY) FLAT PACKAGE
C-MOS 8-BIT 20MSPS VIDEO A/D CONVERTER
— TOP VIEW —



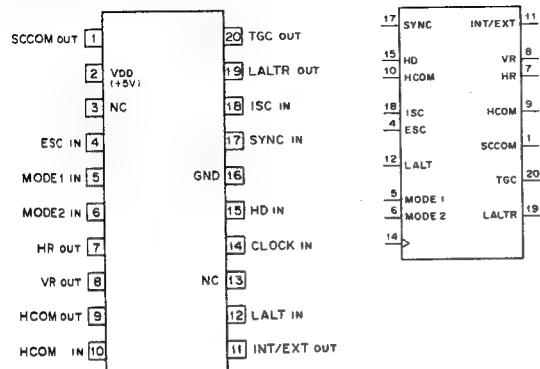
AV_{DD}: ANALOG POWER SUPPLY
AV_{SS}: ANALOG GROUND
CK: CLOCK INPUT
D0-D7: DIGITAL DATA OUTPUTS (LSB TO MSB)
DV_{DD}: DIGITAL POWER SUPPLY
DV_{SS}: DIGITAL GROUND
OE: OUTPUT ENABLE
(OE = HIGH: HIGH IMPEDANCE)
VIN: ANALOG VOLTAGE INPUT
VRB: BOTTOM REFERENCE VOLTAGE INPUT
VRBS: AS SHORT-CIRCUIT AT VRB, GENERATES +0.6V
VRT: TOP REFERENCE VOLTAGE INPUT
VRTS: AS SHORT-CIRCUIT AT VRT, GENERATES +2.6V

STEP	INPUT SIGNAL VOLTAGE	D7	D6	D5	D4	D3	D2	D1	D0
0	0V (VRT)	1	1	1	1	1	1	1	1
1	0.01V	1	1	1	1	1	1	1	0
127	1.34V	1	0	0	0	0	0	0	0
128	1.35V	0	1	1	1	1	1	1	1
255	2.7V (VRB)	0	0	0	0	0	0	0	0

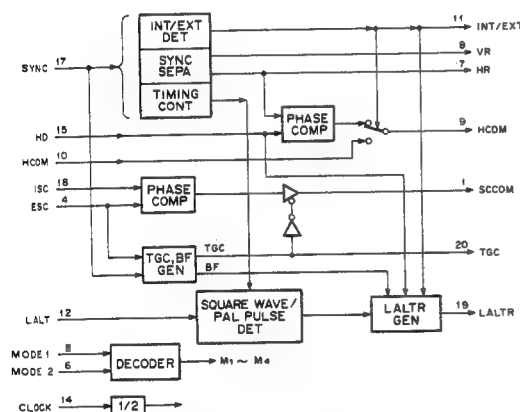
0: LOW LEVEL
1: HIGH LEVEL



CXD1216M (SONY) FLAT PACKAGE

C-MOS GENLOCK DRIVER
- TOP VIEW -

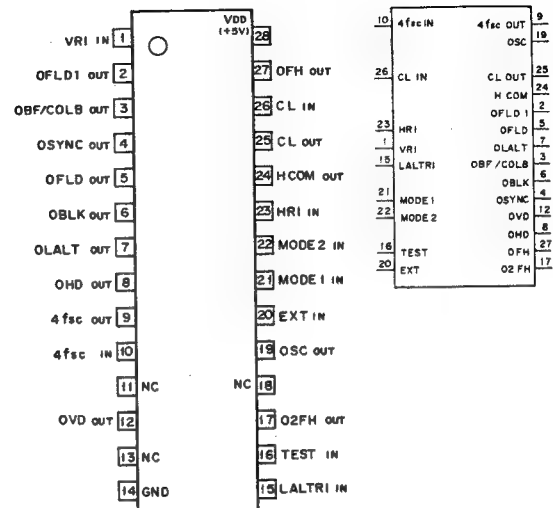
INPUT		MODE	SYSTEM
MODE1	MODE2		
0	0	M1	PAL-VBS
1	0	M2	PALM-VBS
0	1	M3	PAL-SECAM-VS/SC/LALT
1	1	M4	NTSC-VBS, NTSC-VS/SC/LALT

0: LOW LEVEL
1: HIGH LEVEL

INPUT
 CLOCK : 4fsc INPUT
 ESC : SC/COLOR BURST
 HCOM : PHASE COMPARE FROM CXD1217
 HD : H DRIVE FROM CXD1217
 ISC : SUBCARRIER FROM CXD1217
 LALT : LALT FROM REFERENCE SIGNAL GENERATOR
 MODE1,2 : SYSTEM SELECT
 SYNC : SYNC FROM REFERENCE SIGNAL GENERATOR

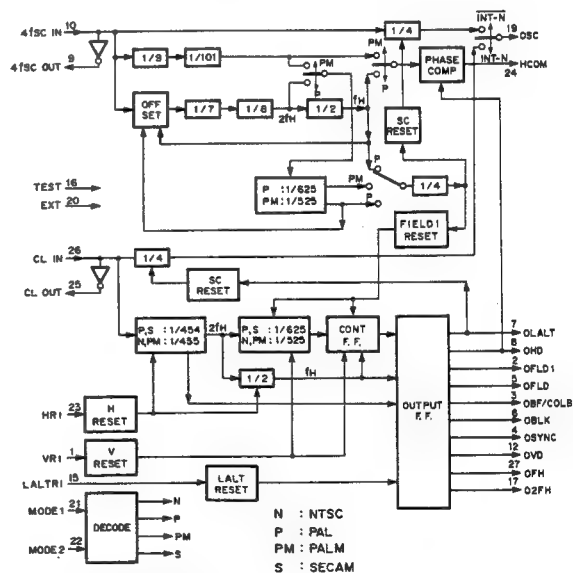
OUTPUT
 HCOM : PHASE COMPARE HR WITH HD
 HR : t_H OF SYNC SEPARATE
 INT/EXT : INTERNAL/EXTERNAL SPECIFIED
 LALTR : LINE CHANGE RESET
 SCCOM : PHASE COMPARE ESC WITH ISC
 TGC : TRISTATE CONTROL
 VR : t_V OF SYNC SEPARATE

CXD1217M (SONY) FLAT PACKAGE

C-MOS SYNC GENERATOR
- TOP VIEW -

SYSTEM	4fsc	CLOCK
NTSC	910 $\frac{1}{2}$ Hz	910 $\frac{1}{2}$ Hz
PAL	1135 $\frac{1}{2}$ Hz	908 $\frac{1}{2}$ Hz
PALM	909 $\frac{1}{2}$ Hz	910 $\frac{1}{2}$ Hz
SECAM	—	908 $\frac{1}{2}$ Hz

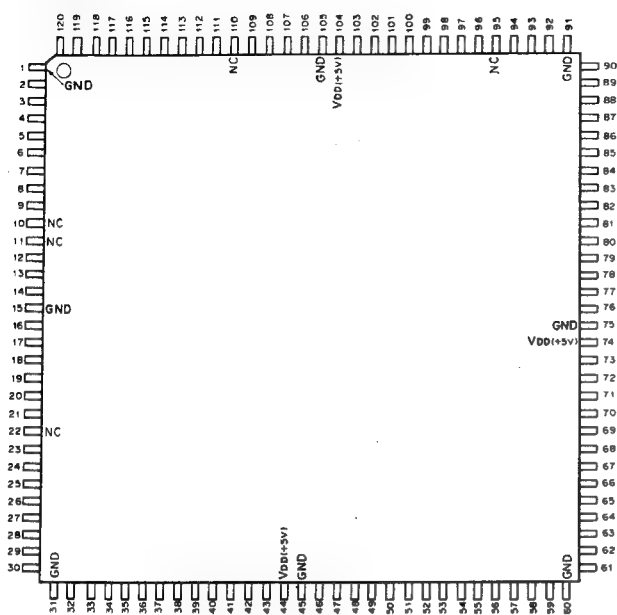
INPUT		SYSTEM
MODE1	MODE2	
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

0: LOW LEVEL
1: HIGH LEVEL

INPUT
 4fsc IN : 4fsc INPUT
 CL IN : CLOCK INPUT
 EXT : SYNC MODE SELECT
 (L: INTERNAL/H: EXTERNAL)
 HRI : H RESET
 LALTRI : LINE CHANGE RESET
 MODE1,2 : SYSTEM SELECT
 VRI : V RESET

OUTPUT
 4fsc OUT : 4fsc OUTPUT
 CL OUT : CLOCK OUTPUT
 HCOM : PHASE COMPARE
 2fH : 2fH OUTPUT
 OBF/COLB : BURST FLAG/COLOR BLANKING
 OBLK : COMPOSITE BLANKING
 OHD : H FREQUENCY
 OFH : EVEN, ODD
 OFLD : FIELD1
 OFLD1 : H DRIVE
 OLALT : LINE CHANGE
 OSC : SUBCARRIER
 OSYNC : COMPOSITE SYNC
 OVD : V DRIVE

CXD1226Q (SONY) FLAT PACKAGE

C-MOS DIGITAL CHROMA DECODER/Y, C FIELD NOISE REDUCER
- TOP VIEW -

PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	-	GND	31	-	GND	61	-	GND	91	-	GND
2	I	CSR0	32	I	CMCK	62	O	MPL	92	I	YMCK
3	I	CSR1	33	I	DOP	63	O	LIMO	93	I	PINV
4	I	CSR2	34	I	USC0	64	I	SW1	94	I	NRFD
5	I	CSR3	35	I	JP10	65	I	MTST	95	-	NC
6	O	CMW0	36	I	JP11	66	O	FSC	96	I	AHD
7	O	CMW1	37	I	YSYS	67	I	INFS	97	I	CHD
8	O	CMW2	38	I	PHEN	68	I	MPXT	98	I	YHD
9	O	CMW3	39	I	PD	69	I	MMTC	99	I	WEVN
10	-	NC	40	O	PED0	70	I	EXFS	100	I	OFSB
11	-	NC	41	O	PED1	71	I	CS0	101	I	SADM
12	I	YSR0	42	O	PED2	72	I	CS1	102	I	CLR
13	I	YSR1	43	O	PED3	73	I	WY7	103	O	CMPT
14	-	VDD(+5V)	44	-	VDD(+5V)	74	-	VDD(+5V)	104	-	VDD(+5V)
15	-	GND	45	-	GND	75	-	GND	105	-	GND
16	I	YSR2	46	O	COCK	76	I	WY6	106	O	RBT
17	I	YSR3	47	O	VCOO	77	I	WY5	107	O	ACK
18	O	YMW0	48	I	VCOI	78	I	WY4	108	I	YDLY
19	O	YMW1	49	O	OUT0	79	I	WY3	109	I	CTH
20	O	YMW2	50	I	IMO	80	I	WY2	110	-	NC
21	O	YMW3	51	O	OUT1	81	I	WY1	111	I	FNR
22	-	NC	52	I	IM1	82	I	WY0	112	I	WVMT
23	I	YSR4	53	-	AG	83	I	WCY7	113	I	WCDT
24	I	YSR5	54	O	OUT2	84	I	WCY6	114	I	WUV0
25	I	YSR6	55	I	IM2	85	I	WCY5	115	I	WUV1
26	I	YSR7	56	I	LIMI	86	I	WCY4	116	I	YEV0
27	O	YMW4	57	O	BPE0	87	I	WCY3	117	I	YEV1
28	O	YMW5	58	O	BPE1	88	I	WCY2	118	I	YEV2
29	O	YMW6	59	O	BPE2	89	I	WCY1	119	I	CEV0
30	O	YMW7	60	O	BPE3	90	I	WCY0	120	I	CEV1

* 1 CHROMA SYSTEM MODE SELECTION

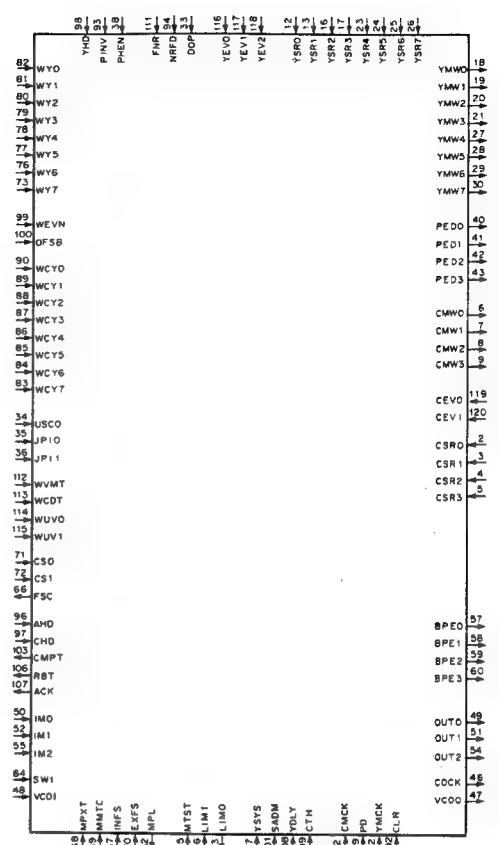
CS1	CS0	MODE
0	0	NTSC
0	1	PAL
1	0	CHROMA BASE BAND INPUT
1	1	PROHIBITION

* 3 CHROMA SIGNAL NOISE REDUCER SELECTION

CEV0	CEV1	OPERATION
0	0	NOISE REDUCER (SOFT)
0	1	NOISE REDUCER (MIDDLE)
1	0	NOISE REDUCER (STRONG)
1	1	NO OPERATION

* 2 Y SIGNAL NOISE REDUCER SELECTION

YEV0	YEV1	YEV2	OPERATION
0	0	0	NOISE REDUCER (SOFT)
0	0	1	NOISE REDUCER (MIDDLE)
0	1	0	NOISE REDUCER (STRONG)
0	1	1	AFTER IMAGE
1	0	0	VERTICAL FILTER
1	0	1	FADE IN/OUT
1	1	0	SELECT AFTER IMAGE
1	1	1	NO OPERATION

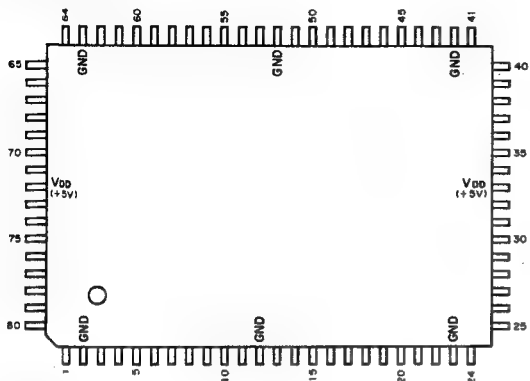
0 : LOW LEVEL
1 : HIGH LEVEL

INPUT	
AG	: ANALOG GND
AHD	: H SYNC INPUT FOR APC
* 3 CEV0, 1	: C NOISE REDUCER MODE SELECT INPUTS
CHD	: H SYNC INPUT FOR BURST DETECT
CLR	: DIRECT CLEAR INPUT
CMCK	: CLOCK INPUT FOR CHROMA SYSTEM
CSR0 - CSR3	: CHROMA READ DATA INPUTS
* 1 CS0, 1	: CHROMA SYSTEM SELECT INPUTS
DOP	: DROPOUT COMPENSATION PULSE INPUT
EXFS	: EXTERNAL FSC INPUT
FNR	: NOISE REDUCER ON/OFF CTRL INPUT
IMO - IM2	: AUDIO RANGE AMP INPUTS
INFS	: INTERNAL FSC INPUT
JP10, 1	: ID CODE MONITOR INPUTS (D2, D3)
LIMI	: WINDOW COMPARATOR INPUT
MMTC, MPXT, MTST, PD	: TEST PIN
NRFD	: Y FIELD NOISE REDUCER DATA INPUT
OFSB	: OFF SET BINARY MODE INPUT
PHEN	: CHROMA APC SYSTEM CONTROL INPUT
PINV	: PEDESTAL CLAMP ERROR INVERT INPUT
SADM	: Y/C SIGNAL, H: COMPOSITE SIGNAL SELECT INPUT
SW1	: AUDIO RANGE SWITCH INPUT
USC0	: USER CODE FOR OPTION
VCOI	: VCO INPUT
WCDT	: WRITE FRAMING CODE TIMING INPUT
WCY0 - WCY7	: L CHROMA SIGNAL, H: COMPOSITE SIGNAL INPUTS
WEVN	: WRITE EVEN/ODD FIELD MONITOR INPUT
WUV0, 1	: WRITE U/V TIMING INPUTS
WVMT	: WRITE VIDEO MUTE
WY0 - WY7	: WRITE Y SIGNAL INPUTS
YDLY	: Y DELAY ADJUST INPUT
* 2 YEV0 - YEV2	: Y NOISE REDUCER MODE SELECT INPUTS
YHD	: Y H DRIVE PULSE INPUT
YMCK	: Y MEMORY CONTROL CLOCK INPUT
YSR0 - YSR7	: Y MEMORY DATA INPUTS
YSYS	: Y DELAY ADJUST INPUT
	(H: 3.58MHz C SYSTEM, L: 4.43MHz C SYSTEM)
OUTPUT	
ACK	: CLOCK OUTPUT FOR APC
	(H: B/W MODE, L: COLOR MODE)
BPE0 - BPE3	: PHASE ERROR OUTPUTS FOR APC
	(OFFSET BINARY OUTPUTS)
CMPT	: MONITOR TERMINAL FOR TEST
CMW0 - CMW3	: CHROMA WRITE DATA OUTPUTS
COCK	: VCO OUT CLOCK OUTPUT
FSC	: 1/4 CLOCK OUTPUT
LIMO	: WINDOW COMPARATOR OUTPUT
MPL	: PHASE COMPARATOR ERROR OUTPUT
OUT0 - OUT2	: AUDIO RANGE AMP OUTPUTS
PED0 - PED3	: PEDESTAL CLAMP ERROR OUTPUTS
RBT	: MONITOR PIN FOR TEST
VCOO	: VCO OUTPUT
YMW0 - YMW7	: Y MEMORY DATA OUTPUTS

CXD1227Q (SONY)

C-MOS DIGITAL CHROMA ENCODER/VERTICAL ENHANCER

- TOP VIEW -



PIN ASSIGNMENT

(V_{DD} = +5V)

PIN NO.	IO	SYMBOL	PIN NO.	IO	SYMBOL	PIN NO.	IO	SYMBOL	PIN NO.	IO	SYMBOL
1	O	TST0	21	I	CMR3	41	I	HPR2	61	I	CKI
2	-	GND	22	I	CMR2	42	-	GND	62	O	CKO
3	O	TST1	23	-	GND	43	O	DOC	63	-	GND
4	O	RC0	24	I	CMR1	44	I	HPR1	64	O	XOUT
5	O	RC1	25	I	CMR0	45	I	HPR0	65	I	XIN
6	O	RC2	26	O	FRM0	46	I	HBD3	66	O	USCO
7	O	RC3	27	O	FRM1	47	I	HBD2	67	I	CLRI
8	O	RC4	28	O	JP10	48	I	HBD1	68	O	PCOM
9	O	RC5	29	O	JP11	49	I	HBD0	69	I	CTLZ
10	O	RC6	30	O	RFSC	50	I	BNS1	70	I	FSIG
11	O	RC7	31	I	CS0	51	I	BNS0	71	I	FREF
12	-	GND	32	I	CS1	52	-	GND	72	O	RY0
13	I	YMR7	33	-	V _{DD}	53	I	YCKI	73	-	V _{DD}
14	I	YMR6	34	I	SDAM	54	I	RVMT	74	O	RY1
15	I	YMR5	35	I	PALP	55	I	BDR	75	O	RY2
16	I	YMR4	36	I	QFSB	56	I	YCFR	76	O	RY3
17	I	YMR3	37	I	BDL7	57	I	RCDT	77	O	RY4
18	I	YMR2	38	I	BDL6	58	I	RVU1	78	O	RY5
19	I	YMR1	39	I	RSYC	59	I	RVU0	79	O	RY6
20	I	YMR0	40	I	YTIM	60	O	REVN	80	O	RY7

20	YMR0	RY0	72	INPUT	BDR	: BORDER TIMING INPUT
19	YMR1	RY1	73	* 1 BDL6, 7	: Y BORDER LEVEL SELECT INPUTS	
18	YMR2	RY2	74	* 2 BNS0, 1	: SOLORIZATION RESOLUTION SELECT	
17	YMR3	RY3	75	CKI	: CHROMA CLOCK INPUT (4fsc)	
16	YMR4	RY4	76	CLRI	: CLEAR INPUT	
15	YMR5	RY5	77	CMRO-3	: CHROMA DATA INPUTS	
14	YMR6	RY6	78	* 3 CS0, 1	: CHROMA SYSTEM SELECT INPUTS	
13	YMR7	RY7	79	CTLZ	: PHASE COMPARATOR OUT CONTROL INPUT	
45	HPR0		80	FREF	: PHASE COMPARATOR REFERENCE SIGNAL INPUT	
44	HPR1			FSIG	: PHASE COMPARATOR SIGNAL INPUT	
41	HPR2			* 4 HBD0, 1	: U-AXIS BORDER LEVEL INPUTS	
51	HPR3			* 5 HBD2, 3	: V-AXIS BORDER LEVEL INPUTS	
50	BNS0			* 6 HPR0-2	: H PROCESS INPUTS	
50	BNS1			OFBS	: OFF SET BINARY MODE INPUT	
38	BDL6			PALP	: PAL PHASE CONTROL INPUT	
37	BDL7			RCDT	: READ FRAMING CODE TIMING INPUT	
40	YTIM			RSYC	: READ SYNC INPUT	
39	BDR			RVU0-1	: READ U/V TIMING INPUTS	
38	RYSC			RVMT	: READ VIDEO MUTE INPUT	
54	RVMT			SDAM	: D/A MODE SELECT INPUT	
33	YCKI			XIN	: CHROMA CLOCK INPUT FOR OSCILLATOR	
				YCKI	: Y CLOCK INPUT (910f _H)	
				YCFR	: Y/C FRAMING ON/OFF SELECT INPUT	
				YMR0-7	: Y DATA INPUTS	
				YTIM	: Y TIMING CONTROL INPUT	
35	CMR0	RC0	4	OUTPUT	COCKO	: CHROMA CLOCK OSCILLATOR OUTPUT (4fsc)
34	CMR1	RC1	5		DOC	: DROP OUT CONTROL MONITOR OUTPUT
22	CMR2	RC2	6		FRMO, 1	: CHROMA FRAMING CODE OUTPUTS
21	CMR3	RC3	7		JPI0, 1	: ID CODE MONITOR OUTPUTS (D2, D3)
48	HBD0	RC4	8		PCOM	: PHASE COMPARATOR OUTPUT
47	HBD1	RC5	9		RC0-7	: READ CHROMA D/A OUTPUTS
46	HBD2	RC6	10		REFV	: READ EVEN/ODD FIELD MONITOR OUTPUT
45	HBD3	RC7	11		RSIG	: READ fsc OUTPUT
59	RUV0				RY0-7	: READ Y D/A OUTPUTS
58	RVU1				TST0, 1	: TEST TERMINALS
31	CS0				USCO	: USER CODE FOR OPTION
32	CS1				XOUT	: CHROMA CLOCK OUTPUT FOR OSCILLATOR
34	SDAM					
35	PALP					
61	CKK1					
		FRMO	26			
		FRM1	27			
56	YCFR	JPI0	28			
57	RCDT	JPI1	29			
		RVN	60			
		USCO	68			
		RFSC	30			
68	CTLZ					
70	FSIG	XOUT	64			
71	FREF	XIN	65			
68	PCOM	CKKO	62			

4	RC0	26	FRM0
5	RC1	27	FRM1
6	RC2	28	JP10
7	RC3	29	JP11
8	RC4	30	REVN
9	RC5	31	RFSC
10	RC6	32	USCO
11	RC7	33	FSIG
		34	XOUT
		35	XIN
		36	CKO

TABLE 1

* 1 BORDER LEVEL

BDL7/BDL6	LEVEL
0 0	8H (-50IRE)
0 1	48H (-100IRE)
1 0	C8H (CLAMP LEVEL)
1 1	C8H (0IRE)

TABLE 2

* 2 SOLORIZATION RESOLUTION

INPUTS	OUTPUTS
BNS0/BNS1	RY0 RY1 RY2 RY3 RY4
0 0	0 0 1 X X
0 1	0 0 0 1 X
1 0	0 0 0 0 1
1 1	X X X X X

TABLE 3

* 3 CHROMA SYSTEM MODE SELECTION

CS1	CS0	MODE
0 0	0	NTSC
0 1	1	PAL
1 0	0	CHROMA BASE BAND OUT
1 1	1	(PAL)

TABLE 4

* 4 U-AXIS BORDER LEVEL

HBD1/HBD0	LEVEL
0 0	20 IRE
0 1	-20 IRE
1 0	-30 IRE
1 1	0 IRE

TABLE 5

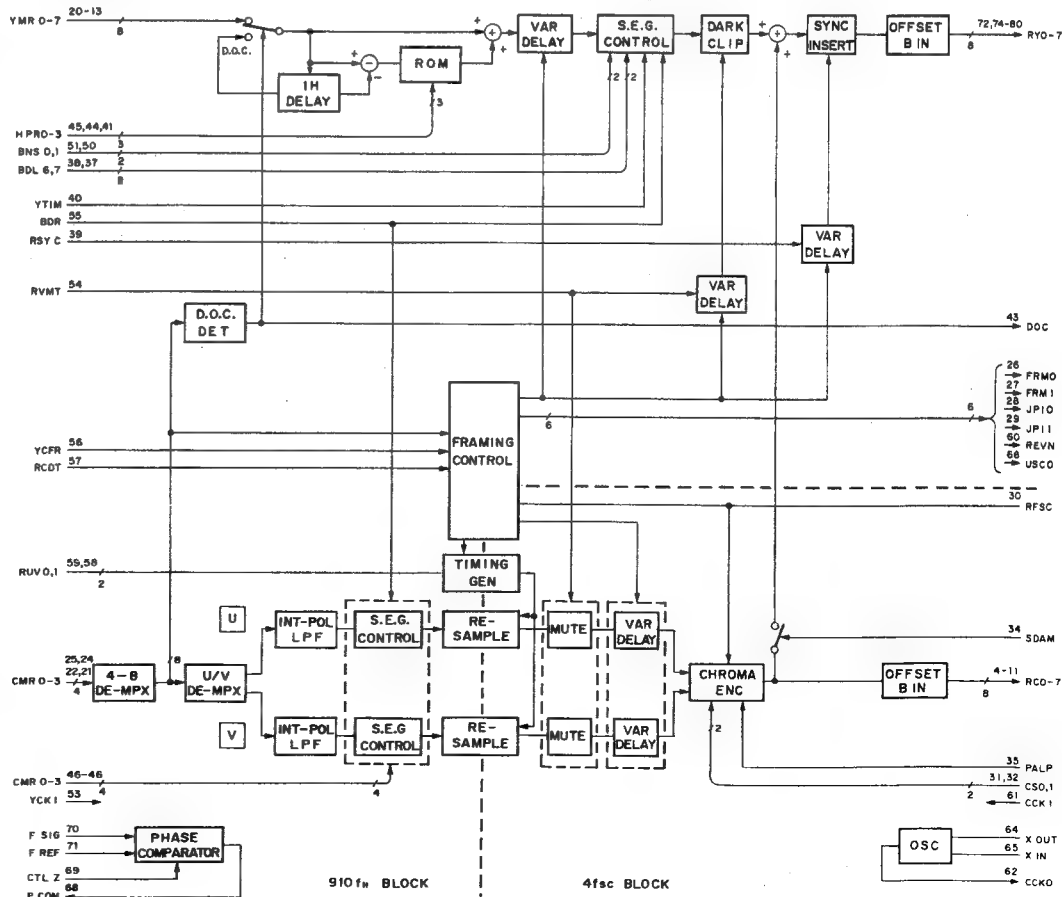
* 5 V-AXIS BORDER LEVEL

HBD3/HBD2	LEVEL
0 0	20 IRE
0 1	-20 IRE
1 0	-30 IRE
1 1	0 IRE

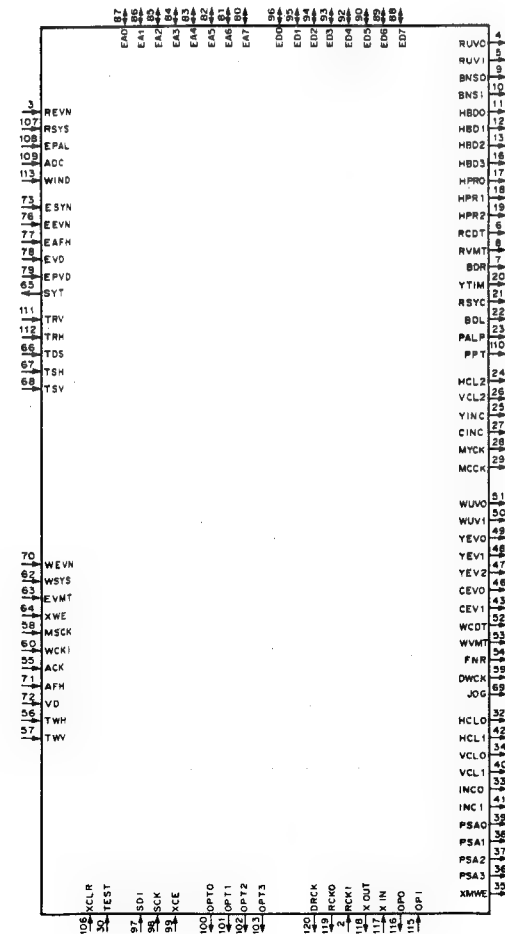
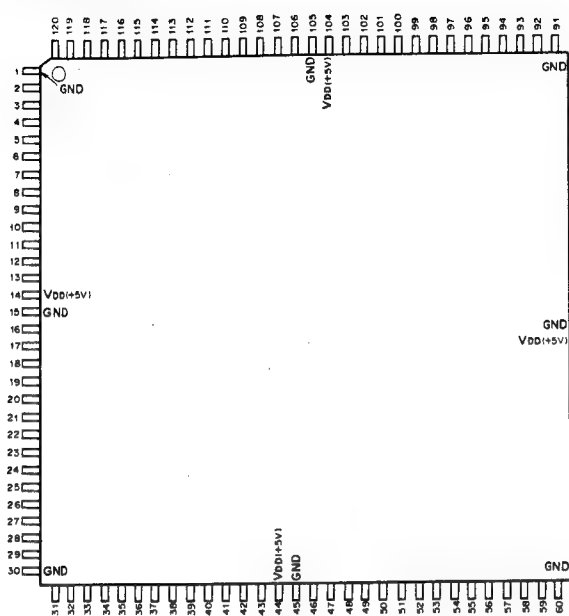
TABLE 6

* 6 H PROCESS MODE SELECTION

HPR2/HPR1	HPR0	OPERATION
0 0	0	V-ENHANCE (SOFT)
0 0	1	V-ENHANCE (SOFT)
0 1	0	V-ENHANCE (MIDDLE)
0 1	1	V-ENHANCE (STRONG)
1 0	0	MIX RATIO H _r :H _p =1:1
1 0	1	MIX RATIO H _r :H _p =1:3
1 1	0	MIX RATIO H _r :H _p =3:1
1 1	1	NO PLAY

0: LOW LEVEL
1: HIGH LEVELH_r = THROUGH
H_p = 1H DELAY

CXD1228Q (SONY) FLAT PACKAGE
C-MOS MEMORY ADDRESS CONTROLLER
- TOP VIEW -



PIN	I/O	SYMBOL	PIN	I/O	SYMBOL	PIN	I/O	SYMBOL	PIN	I/O	SYMBOL
NO			NO			NO			NO		
1	-	GND	31	-	GND	61	-	GND	91	-	GND
2	I	RCK1	32	O	HCL0	62	I	WSYS	92	I/O	ED4
3	I	REVN	33	O	INCO	63	I	EVMT	93	I/O	ED3
4	O	RUV0	34	O	VCL0	64	I	XWE	94	I/O	ED2
5	O	RUV1	35	O	WMWE	65	O	SYT	95	I/O	ED1
6	O	RCDT	36	O	PSA3	66	I	TDS	96	I/O	ED0
7	O	BDR	37	O	PSA2	67	I	TSH	97	I	SD1
8	O	RVMT	38	O	PSA1	68	I	TSV	98	I	SDK
9	O	BNS0	39	O	PSA0	69	O	JOG	99	I	XCE
10	O	BNS1	40	O	VCL1	70	I	WEVN	100	O	OPT0
11	O	HBD0	41	O	INC1	71	I	AFH	101	O	OPT1
12	O	HBD1	42	O	HCL1	72	I	VD	102	O	OPT2
13	O	HBD2	43	O	CEV1	73	I	ESYN	103	O	OPT3
14	-	Vpp (+5V)	44	-	Vpp (+5V)	74	-	Vpp (+5V)	104	-	Vpp (+5V)
15	-	GND	45	-	GND	75	-	GND	105	-	GND
16	O	HBD3	46	O	CEV0	76	I	EEVN	106	I	XCLR
17	O	HPR0	47	O	YE2	77	I	EAHF	107	I	RSYS
18	O	HPR1	48	O	YE1	78	I	EVD	108	I	EPAL
19	O	HPR2	49	O	YE0	79	I	EPVD	109	I	ADC
20	O	YTIM	50	O	WUV1	80	I/O	EA7	110	O	PPT
21	O	RSYC	51	O	WUV0	81	I/O	EA6	111	I	TRV
22	O	BDL	52	O	WCDT	82	I/O	EA5	112	I	TRH
23	O	PALP	53	O	WVMT	83	I/O	EA4	113	I	WIND
24	O	HCL2	54	O	FNR	84	I/O	EA3	114	O	VPER
25	O	YINC	55	I	ACK	85	I/O	EA2	115	I	OPI
26	O	VCL2	56	I	TWH	86	I/O	EA1	116	O	OPO
27	O	CINC	57	I	TWV	87	I/O	EA0	117	I	XIN
28	O	MYCK	58	I	MSCK	88	I/O	ED7	118	O	XOUT
29	O	MCCG	59	O	DWCK	89	I/O	ED6	119	O	RCKO
30	I	TST	60	I	WCK1	90	I/O	ED5	120	O	DRCK

```

INPUT      : CLOCK INPUT FOR APC (H: B/W MODE L: COLOR MODE)
ADC        : CHROMA ADDRESS CONTROL INPUT
APC_H      : APC H DRIVE INPUT
EAFH       : EXTERNAL SYNC MODE H DRIVE INPUT
EEVN       : EXTERNAL SYNC MODE EVEN/ODD SELECT INPUT
EPAL       : EXTERNAL SYNC MODE PAL COLOR ID INPUT
EPVD       : REFERENCE VD
EESYN      : EXTERNAL SYNC MODE CHROMA SYNC INPUT
EVD        : EXTERNAL SYNC MODE V DRIVE INPUT
EVMUT      : EXTERNAL VIDEO MUTE INPUT (H: MUTE, L: NORMAL)
MSCK       : MASTER CLOCK INPUT
OPI        : INVERTER INPUT
RCKI       : READ CLOCK INPUT
REVW       : READ EVEN/ODD FIELD MONITOR INPUT
RSYS       : READ SYNC SELECT INPUT (H: NTSC, L: PAL)
SDI        : SERIAL DATA INPUT
SDS        : SERIAL CLOCK INPUT
TDS, TRH, TRV, TSH
TST, TSV, TWH, TVW
            : TEST PIN
VCKI       : VERTICAL SYNC DETECT INPUT
VCKI       : WRITE CLOCK INPUT
WEVN       : WRITE EVEN/ODD FIELD MONITOR INPUT
WINDOW     : WINDOW COMPARATOR INPUT FOR V-PLL
WSYS       : WRITE SYNC SELECT INPUT (H: NTSC, L: PAL)
XCE        : CHIP ENABLE INPUT
XCLR       : DIRECT CLEAR INPUT
XIN        : CLOCK INPUT
XWE        : WRITE ENABLE INPUT

```

INPUTS		OUTPUTS				
BNS0	BNS1	RY0	RY1	RY2	RY3	RY4
0	0	0	0	1	X	X
0	1	0	0	0	1	X
1	0	0	0	0	0	1
1	1	X	X	X	X	X

* 2 CHROMA SIGNAL NOISE REDUCER SELECTION

CEV0	CEV1	OPERATION
0	0	NOISE REDUCER (SOFT)
0	1	NOISE REDUCER (MIDDLE)
1	0	NOISE REDUCER (STRONG)
1	1	NO OPERATION

* 3 U-AXIS BORDER LEVEL

HBD1	HBD0	LEVEL
0	0	20 IRE
0	1	- 20 IRE
1	0	- 30 IRE
1	1	0 IRE

* 4 V-AXIS BORDER LEVEL

HBO3	HBO2	LEVEL
0	0	20 IRE
0	1	- 20 IRE
1	0	- 30 IRE
1	1	0 IRE

* 5 H PROCESS MODE SELECTION

HPR2	HPR1	HPR0	OPERATION
0	0	0	V-ENHANCE (SOFT)
0	0	1	V-ENHANCE (SOFT)
0	1	0	V-ENHANCE (MIDDLE)
0	1	1	V-ENHANCE (STRONG)
1	0	0	MIX RATIO H1:H0=1:1
1	0	1	MIX RATIO H1:H0=1:3
1	1	0	MIX RATIO H1:H0=3:1
1	1	1	NO PLAY

0 : LOW LEVEL
1 : HIGH LEVEL

```

OUTPUT
BDL          : Y BORDER LEVEL OUTPUT
BDR          : BORDER OUTPUT
BNS0, 1     : SOLARIZATION CONTROL OUTPUTS
C0, 1       : NOISE REDUCER MODE SELECT OUTPUTS
CINC        : READ PORT CHROMA INCREMENT OUTPUT
DRCK        : DELAYED READ CLOCK OUTPUT
DWCK        : DELAYED WRITE CLOCK OUTPUT
FNR         : NOISE REDUCER ON/OFF CONTROL OUTPUT
HBD0, 1     : X-AXIS BORDER LEVEL OUTPUTS
HBD2, 3     : X-AXIS BORDER LEVEL OUTPUTS
HCL0        : WRITE PORT HORIZONTAL CLEAR OUTPUT
HCL1, 2     : READ PORT HORIZONTAL CLEAR OUTPUTS
HPR0 - HPR2 : ■ PROCESS OUTPUTS
INC0        : WRITE PORT LINE INCREMENT OUTPUT
INC1        : READ PORT LINE INCREMENT OUTPUT
JOG         : REFERENCE CONTROL OUTPUT
MCK0 PORT   : READ PORT CHROMA CLOCK OUTPUT
MYCK        : READ PORT Y CLOCK OUTPUT
OPO         : INVERTER OUTPUT
OPT0 - OPT3 : OPTION OUTPUTS
PALP        : PAL PHASE CONTROL OUTPUT
PPT         : SMALL PICTURE TIMING OUT
PSA0 - PSA3 : WRITE PORT TRANSFER SYNC OUTPUTS
RCDT        : READ FRAMING CODE TIMING OUTPUT
RCK0        : READ CLOCK OUTPUT
RVU0, 1     : READ U/V TIMING OUTPUTS
RVMT        : READ MUTING OUTPUT
SVT         : MONITOR PIN FOR TEST
VCL0, 2     : WRITE PORT VERTICAL CLEAR OUTPUT
VCL1, 2     : READ PORT VERTICAL CLEAR OUTPUTS
VPER        : V PHASE COMPARATOR OUTPUT
WCDT        : WRITE FRAMING CODE TIMING OUTPUT
WUVO, 1     : WRITE U/V TIMING OUTPUTS
WVMT        : WRITE VIDEO MUTE OUTPUT
XWME        : WRITE PORT WRITE ENABLE OUTPUT
XOUT        : X-CLOCK OUTPUT
YEVO - YE2V : Y NOISE REDUCER MODE SELECT OUTPUTS
YINC        : READ PORT Y INCREMENT OUTPUT
YTIM        : Y TIMING CONTROL OUTPUT

```

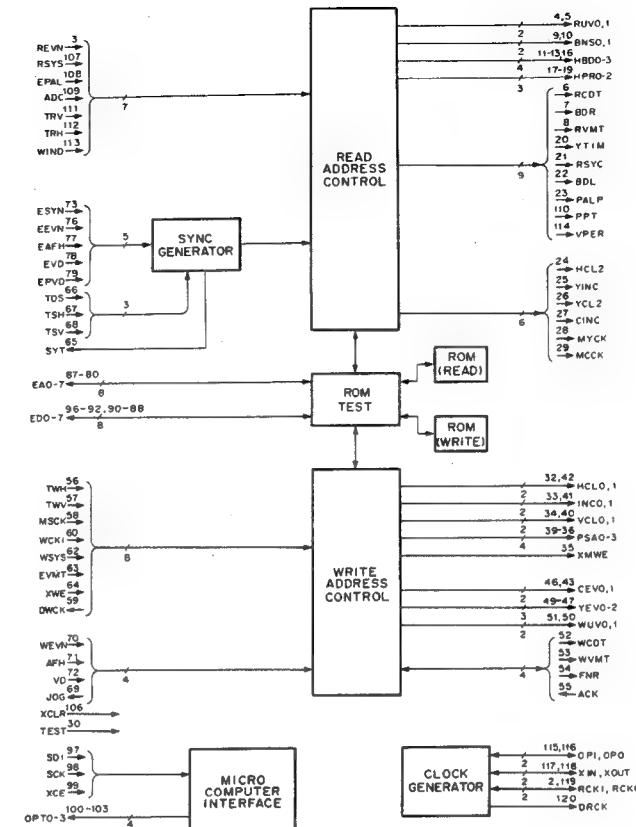
INPUT/OUTPUT
EA0 - EA7 : ROM TEST TERMINAL INPUTS/OUTPUTS
ED0 - ED7 : ROM TEST TERMINAL INPUTS/OUTPUTS

CE (SOFT)
CE (SOFT)
CE (MIDDLE)
CE (STRONG)
D Hr:H _p =1:1
D Hr:H _p =1:3
D Hr:H _p =3:1
PLAY

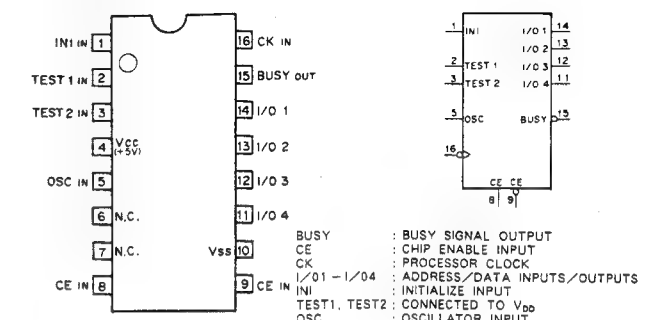
H_T = THROUGH
H_p = 1H DELAY

* 6 Y SIGNAL NOISE REDUCER SELECTION

YEV0	YEV1	YEV2	OPERATION
0	0	0	NOISE REDUCER (SOFT)
0	0	1	NOISE REDUCER (MIDDLE)
0	1	0	NOISE REDUCER (STRONG)
0	1	1	AFTER IMAGE
1	0	0	VERTICAL FILTER
1	0	1	FADE IN/OUT
1	1	0	SELECT AFTER IMAGE
1	1	1	NO OPERATION



CXK1009P (SONY)
N-MOS 2048BIT(128x16) EPROM
- TOP VIEW -

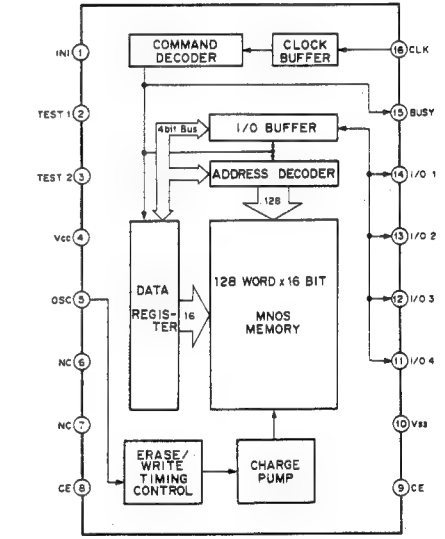


INPUT					FUNCTION
CE	I/O2	I/O3	I/O4		
0	0	0	1	0	READ
0	1	0	1	0	WRITE
0	X	X	0	0	NO OPERATION
0	X	X	0	1	NO OPERATION
0	X	X	1	1	NO OPERATION
1	X	X	X	X	NO OPERATION

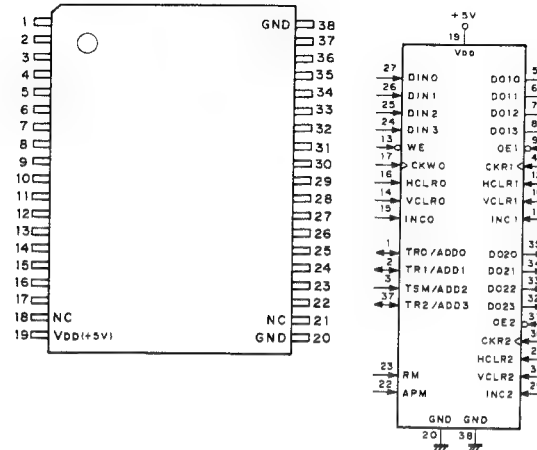
```

0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE

```



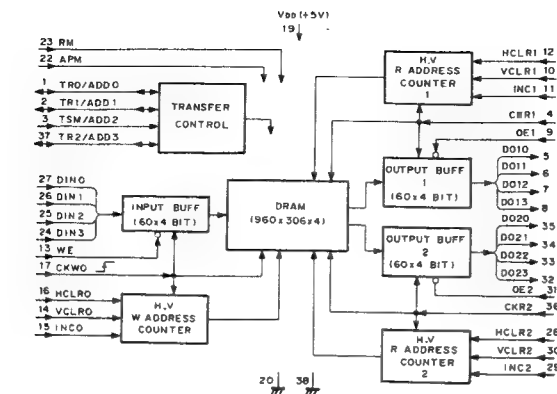
C-MOS VIDEO FIELD MEMORY (960-COLUMNx306-ROWx4-BIT)
- TOP VIEW -



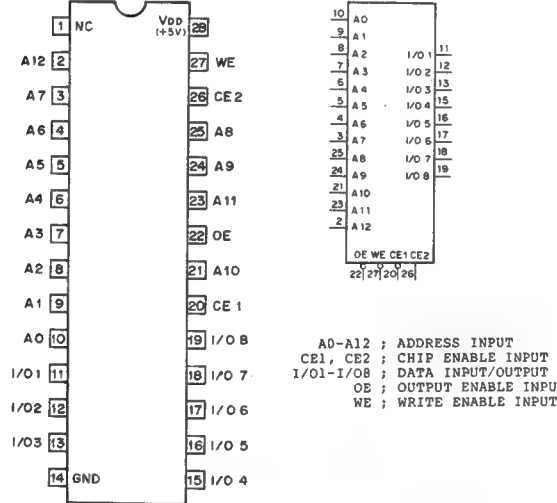
PIN	SIGNAL	DESCRIPTION
1	TR0/ADD0	W PORT 0 TRANSFER SYNC I/O, ADDRESS 0 INPUT
2	TR1/ADD1	R PORT 1 TRANSFER SYNC I/O, ADDRESS 1 INPUT
3	TSM/ADD2	TRANSFER SYNCHRONOUS MODE, ADDRESS 2 INPUT
4	CKR1	R PORT 1 SHIFT SIGNAL INPUT
5	DO10	R PORT 1 DATA 0 OUTPUT
6	DO11	R PORT 1 DATA 1 OUTPUT
7	DO12	R PORT 1 DATA 2 OUTPUT
8	DO13	R PORT 1 DATA 3 OUTPUT
9	OE1	R PORT 1 OUTPUT ENABLE INPUT
10	VCCLR1	R PORT 1 VERTICAL CLEAR INPUT
11	INCL1	R PORT 1 LINE INCREMENT INPUT
12	HCCLR1	R PORT 1 HORIZONTAL CLEAR INPUT
13	WE	W PORT 0 WRITE ENABLE INPUT
14	VCCLR0	W PORT 0 VERTICAL CLEAR INPUT
15	INCL0	W PORT 0 LINE INCREMENT INPUT
16	HCCLR0	W PORT 0 HORIZONTAL CLEAR INPUT
17	CKW0	W PORT 0 SHIFT SIGNAL INPUT
18	NC	(no connection)
19	VDD	+5V INPUT
20	GND	GND
21	NC	(no connection)
22	APM	ADDRESS PRESET MODE INPUT
23	RMH	RECURSIVE MODE ENABLE INPUT
24	DN3	W PORT 0 DATA 3 INPUT
25	DN2	W PORT 0 DATA 2 INPUT
26	DN1	W PORT 0 DATA 1 INPUT
27	DN0	W PORT 0 DATA 0 INPUT
28	HCCLR2	R PORT 2 HORIZONTAL CLEAR INPUT
29	INC2	R PORT 2 LINE INCREMENT INPUT
30	VCCLR2	R PORT 2 VERTICAL CLEAR INPUT
31	OE2	R PORT 2 OUTPUT ENABLE INPUT
32	DO23	R PORT 2 DATA 3 OUTPUT
33	DO22	R PORT 2 DATA 2 OUTPUT
34	DO21	R PORT 2 DATA 1 OUTPUT
35	DO20	R PORT 2 DATA 0 OUTPUT
36	CKR2	R PORT 2 SHIFT SIGNAL INPUT
37	TR2/ADD3	R PORT 2 TRANSFER SYNC I/O, ADDRESS 3 INPUT
38	GND	GND

MODE SELECTION					
CONTROL INPUTS			TS, TR/ADD		MODE
RM	APM	TSM	TR 0-2	ADD 0-3	
0	0	0	OUT PUT	-	NON RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE OUTPUT
0	0	1	IN-PUT	-	NON RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE INPUT
0	1	-	-	IN-PUT	NON RECURSIVE MODE, ADDRESS PRESET MODE
1	0	0	OUT PUT	-	RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE OUTPUT
1	0	1	IN-PUT	-	RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE INPUT

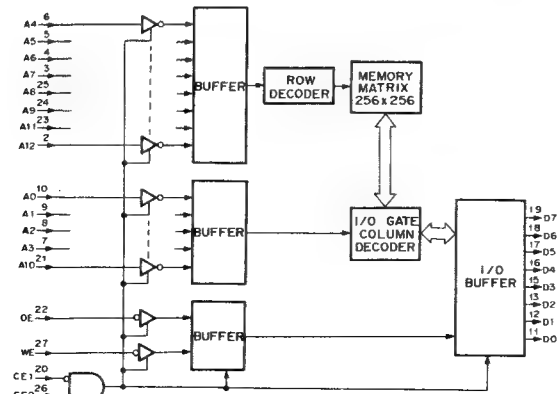
0:LOW LEVEL 1:HIGH LEVEL



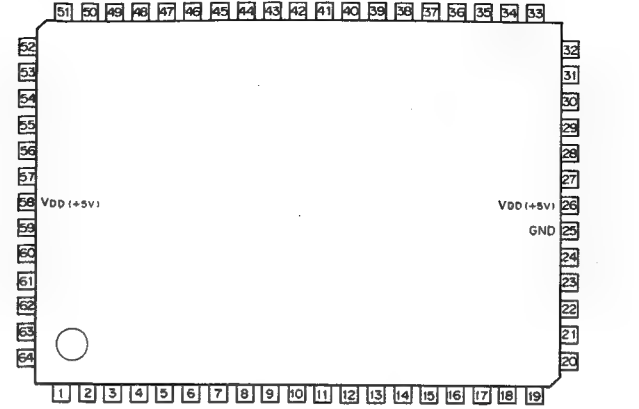
C-MOS 64K(8192x8)-BIT STATIC RAM
- TOP VIEW -



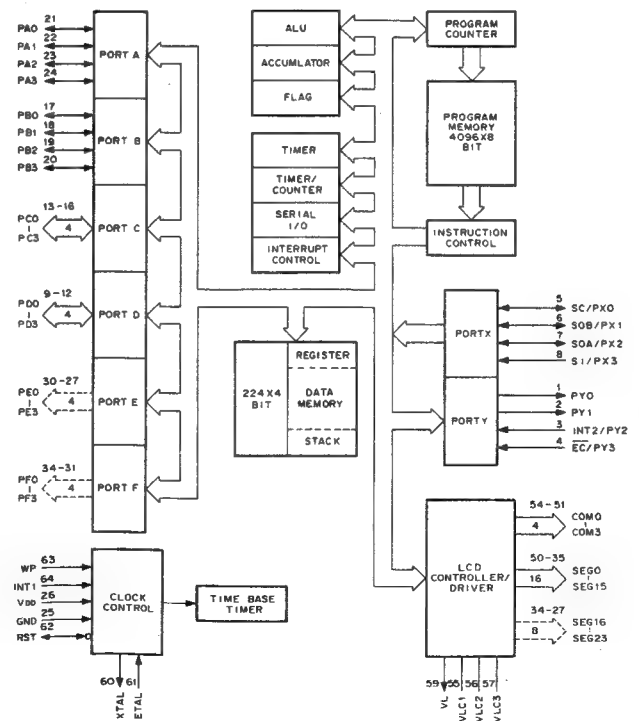
CE1	CE2	OE	WE	MODE	I/O TERMINAL	
1	X	X	X	NOT SELECT	HIGH IMPEDANCE	
X	0	X	X	NOT SELECT	HIGH IMPEDANCE	
0	1	1	1	OUTPUT DISABLE	HIGH IMPEDANCE	0; LOW LEVEL
0	1	0	1	READ	OUTPUT DATA	1; HIGH LEVEL
0	1	X	0	WRITE	INPUT DATA	X; DON'T CARE



51 50 46

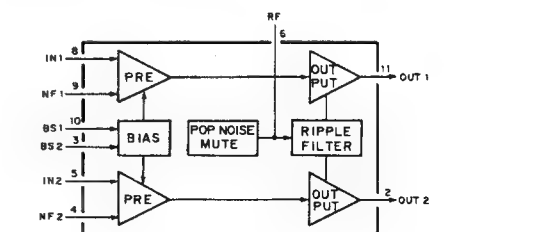
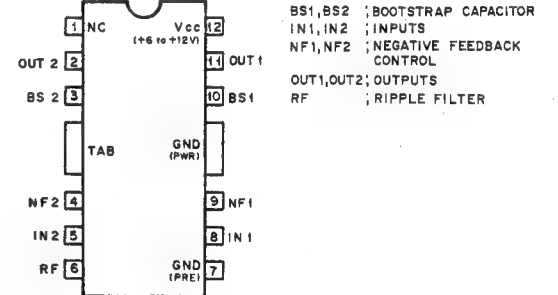
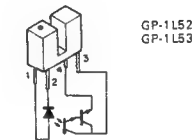
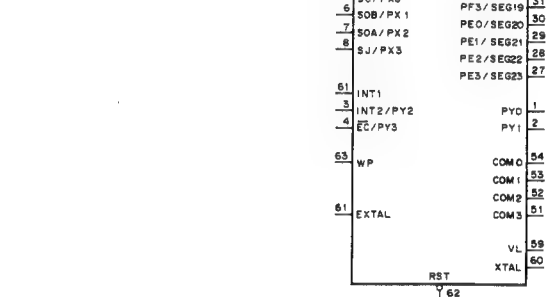


PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	O	RY0	17	I/O	PB0	33	O	PF1/SEG17	49	O	SEG1
2	O	RY1	18	I/O	PB1	34	O	PF0/SEG16	50	O	SEG0
3	I	INT2/PY2	19	I/O	PB2	35	O	SEG15	51	O	COM3
4	I	EC/PY3	20	I/O	PB3	36	O	SEG14	52	O	COM2
5	I/O	SC/PX0	21	I/O	PA0	37	O	SEG13	53	O	COM1
6	I/O	SOB/PX1	22	I/O	PA1	38	O	SEG12	54	O	COM0
7	I/O	SOAP/X2	23	I/O	PA2	39	O	SEG11	55	—	VLc1
8	I	SUX/P3	24	I/O	PA3	40	O	SEG10	56	—	VLc2
9	I/O	PD0	25	—	Vss (GND)	41	O	SEG9	57	—	VLc3
10	I/O	PD1	26	—	Vcc	42	O	SEG8	58	—	Vcc
11	I/O	PD2	27	O	PE3/SEG23	43	O	SEG7	59	O	VL
12	I/O	PD3	28	O	PE2/SEG22	44	O	SEG6	60	O	XTAL
13	I/O	PC0	29	O	PE1/SEG21	45	O	SEG5	61	I	EXTAL
14	I/O	PC1	30	O	PE0/SEG20	46	O	SEG4	62	I/O	RST
15	I/O	PC2	31	O	PF3/SEG19	47	O	SEG3	63	I	WP
16	I/O	PC3	32	O	PF2/SEG18	48	O	SEG2	64	I	INT1

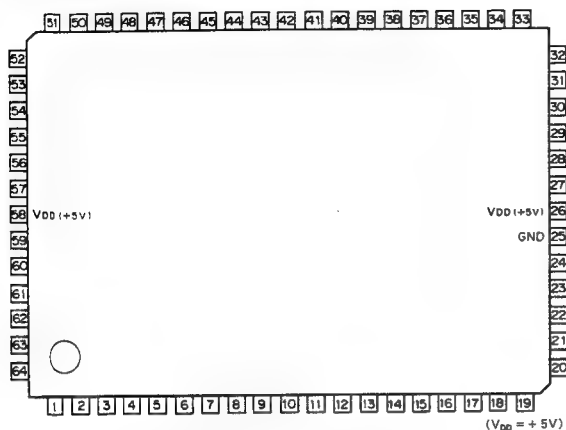


OUTPUT		19	PB1	SEG6	44
COM0 - COM3: COMON OUTPUTS			PB2	SEG7	43
SEG0 - SEG23: SEGMENT OUTPUTS		20	PB3	SEG8	42
SOA. B	: SERIAL OUTPUTS	13		SEG9	41
VL	: CUTOFF	14	PC0	SEG10	40
XTAL	: CLOCK OUTPUT	15	PC1	SEG11	39

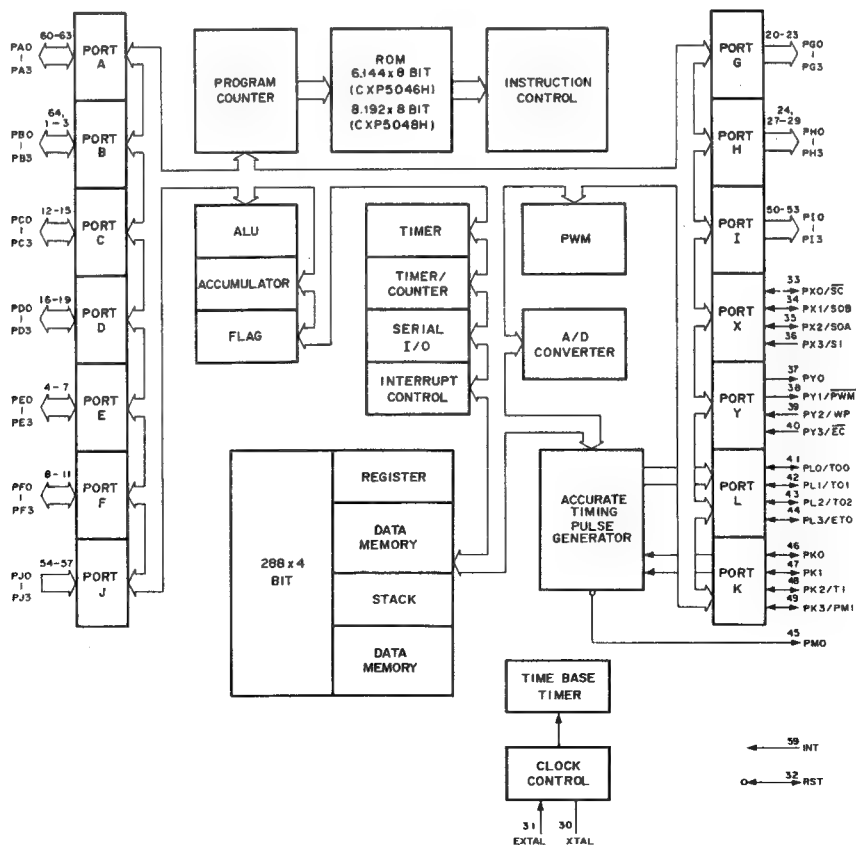
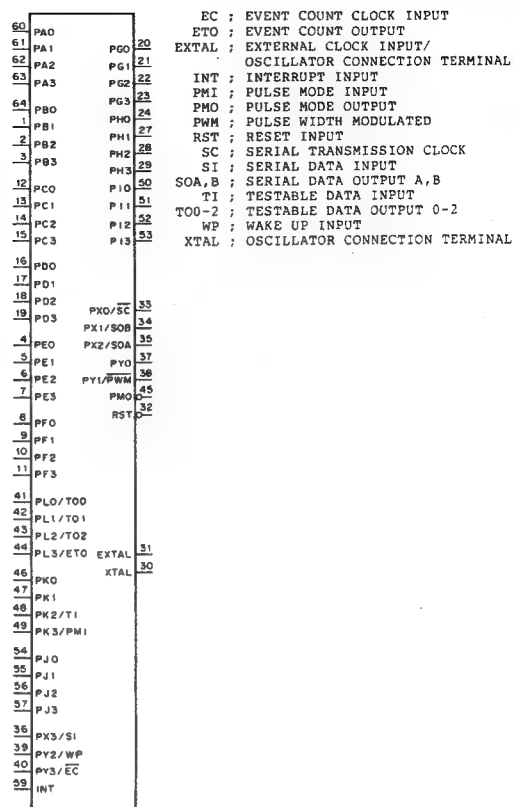
INPUT/OUTPUT		16	PC3	SEG16	<u>38</u>
PA0 - PA3	: PORT A				<u>37</u>
PB0 - PB3	: PORT B				<u>36</u>
PC0 - PC3	: PORT C	9	PDO	SEG14	<u>35</u>
PD0 - PD3	: PORT D	10	PDI	SEG15	<u>34</u>
PE0 - PE3	: PORT E	11	PDI	SEG15	<u>34</u>
PF0 - PF3	: PORT F	12	PDS	PF0/SEG16	<u>33</u>
PX0 - PX3	: PORT X			PF1/SEG17	<u>32</u>
PY0 - PY3	: PORT Y			PF2/SEG18	<u>31</u>
		8	PF2/SEG18		<u>30</u>

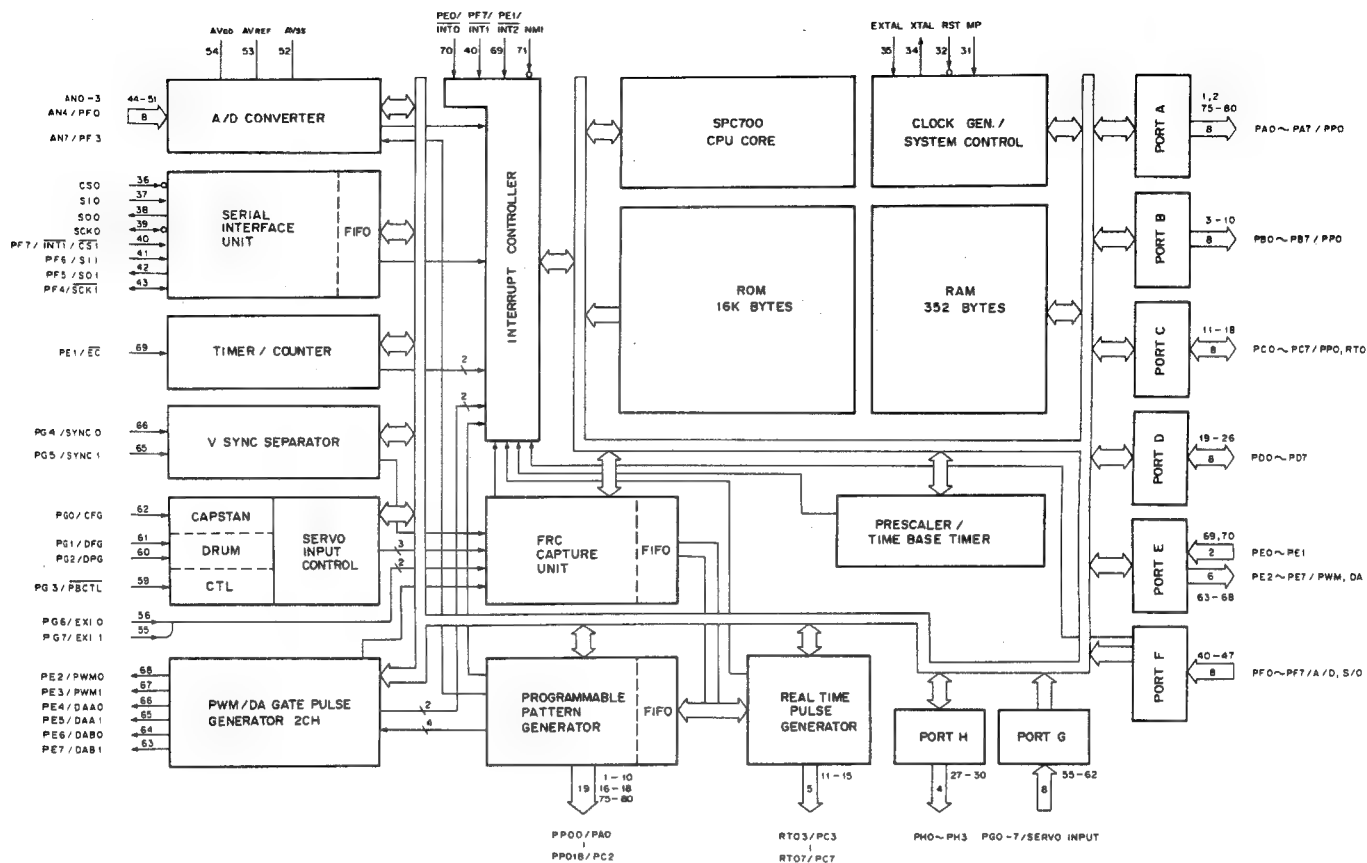


CXP5048H-? ? ?Q (SONY) FLAT PACKAGE
C-MOS 4-BIT MICROCOMPUTER
- TOP VIEW -



PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	I/O	PB1	17	I/O	PD1	33	I/O	PX0/SC	49	I/O	PK3/PMI
2	I/O	PB2	18	I/O	PD2	34	I/O	PX1/SOB	50	O	PI0
3	I/O	PB3	19	I/O	PD3	35	I/O	PX2/SOA	51	O	PI1
4	I/O	PE0	20	O	PG0	36	I	PX3/SI	52	O	PI2
5	I/O	PE1	21	O	PG1	37	O	PY0	53	O	PI3
6	I/O	PE2	22	O	PG2	38	O	PY1/PWM	54	I	PJ0
7	I/O	PE3	23	O	PG3	39	I	PY2/WP	55	I	PJ1
8	I/O	PF0	24	O	PH0	40	I	PY3/EC	56	I	PJ2
9	I/O	PF1	25	-	GND	41	I/O	PL0/TO0	57	I	PJ3
10	I/O	PF2	26	-	VDD	42	I/O	PL1/TO1	58	-	VDD
11	I/O	PF3	27	O	PH1	43	I/O	PL2/TO2	59	I	INT
12	I/O	PC0	28	O	PH2	44	I/O	PL3/ETO	60	I/O	PA0
13	I/O	PC1	29	O	PH3	45	O	PMO	61	I/O	PA1
14	I/O	PC2	30	O	XTAL	46	I/O	PK0	62	I/O	PA2
15	I/O	PC3	31	I	EXTAL	47	I/O	PK1	63	I/O	PA3
16	I/O	PD0	32	I/O	RST	48	I/O	PK2/TI	64	I/O	PB0

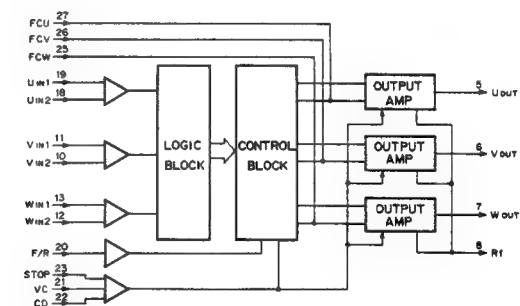
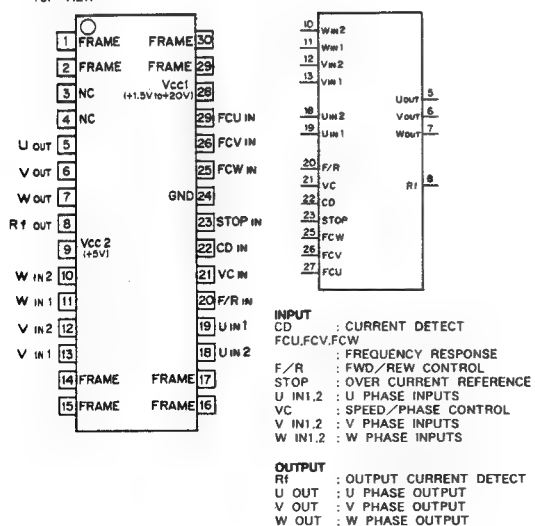




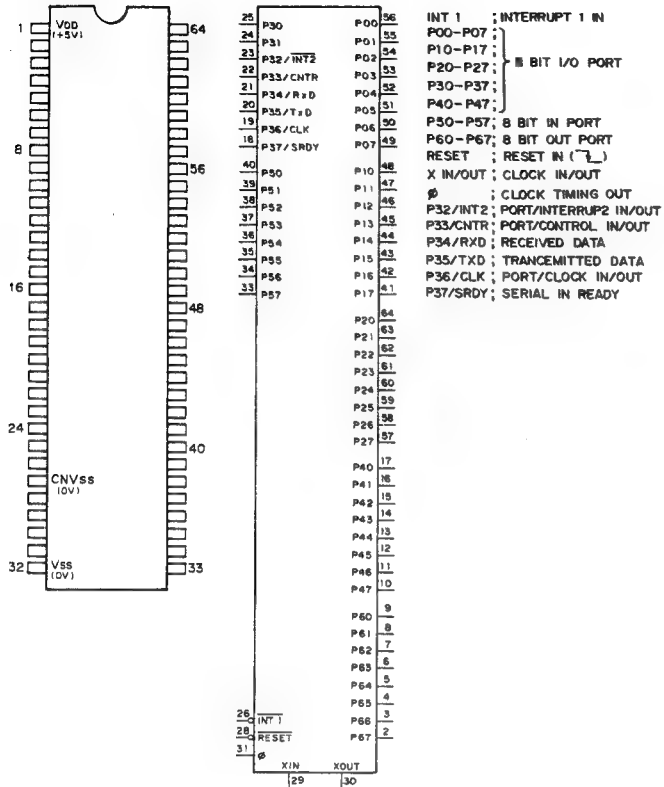
LB1616M (SANYO) FLAT PACKAGE

3DD MOTOR DRIVER

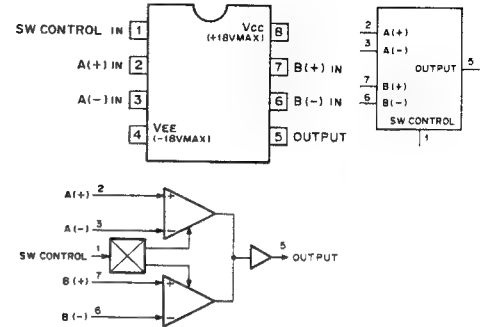
- TOP VIEW -



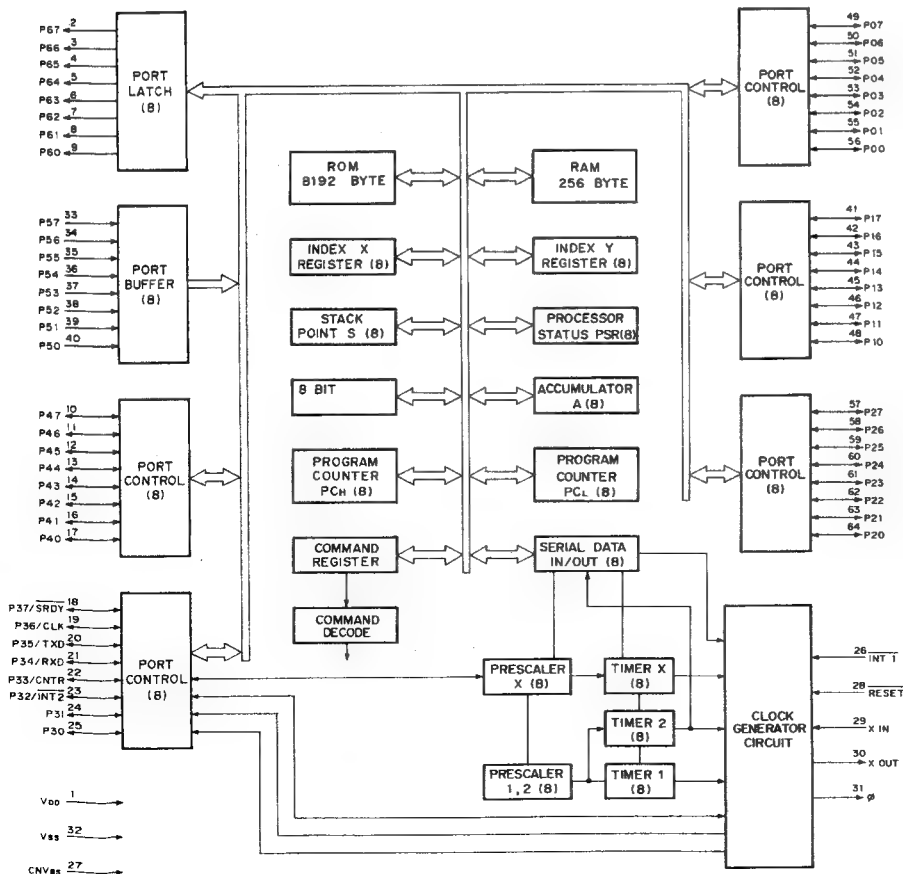
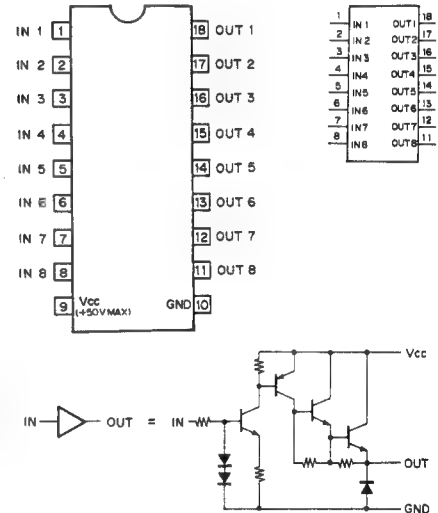
M50747H-XXXSP
C-MOS PROCESS 8-BIT ONE CHIP MICROCOMPUTER
— TOP VIEW —



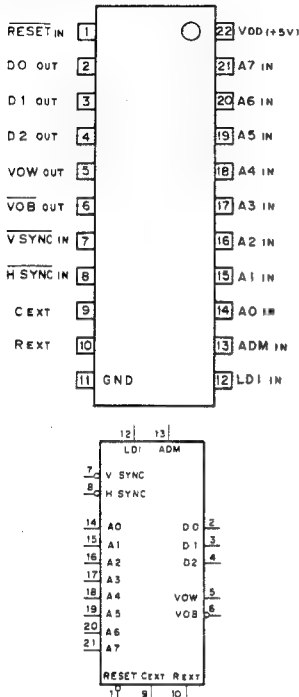
M5201FP (MITSUBISHI) FLAT PACKAGE
DUAL OPERATIONAL AMPLIFIER WITH SWITCHED OUTPUT
— TOP VIEW —



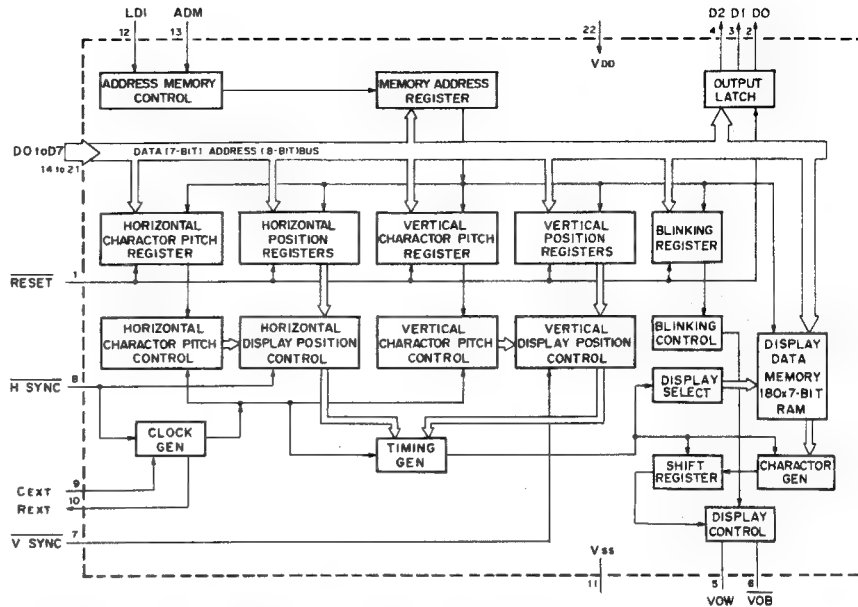
M54562P (MITSUBISHI)
SOURCE TYPE DARLINGTON TRANSISTOR ARRAY
— TOP VIEW —



MB88303 (FUJITSU)
N-MOS PROGRAMMABLE TV DISPLAY CONTROLLER
— TOP VIEW —

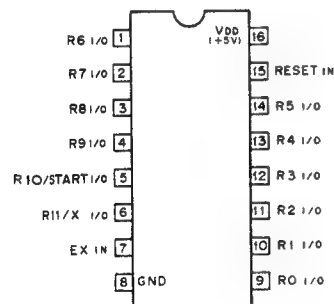


ADM : ADDRESS INCREMENT MODE
A0 to A7 : ADDRESS INPUT
DO to D2 : DATA OUTPUT
CEXT : EXT CAPACITOR FOR OSC
LD1 : LOAD DATA AND INSTRUCTION
VOB : VIDEO BLACK OUT
VOW : VIDEO WHITE OUT
REXT : EXT RESISTOR FOR OSC

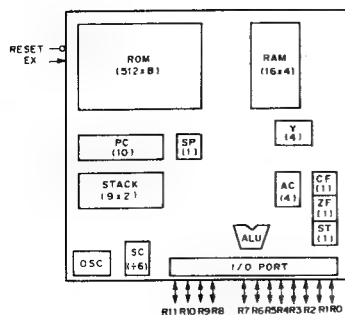


	b3-b0	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
b5-b4	DO	A	B	C	D	E	F	G	H	I	J	K	L	M	.	L	BLANK
	D1	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	:	■	[
	10	0	1	2	3	4	5	6	7	8	9	?	!	'	.	BAC]
	11	↑	↓	←	→	+	-	*	/	=	&						

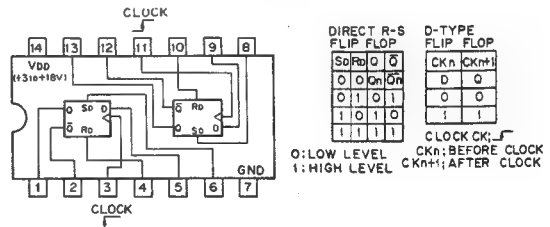
MB88201H (FUJITSU)
C-MOS 4 BIT MICROCOMPUTER
— TOP VIEW —



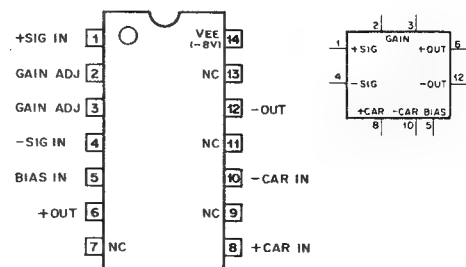
EX : EXTERNAL XTAL IN
RO-R11 : I/O PORT(R) IN/OUT
RESET : RESET IN
START : STANDBY RELEASE IN
R11/X : EXT CLOCK IN/INT CLOCK OUT



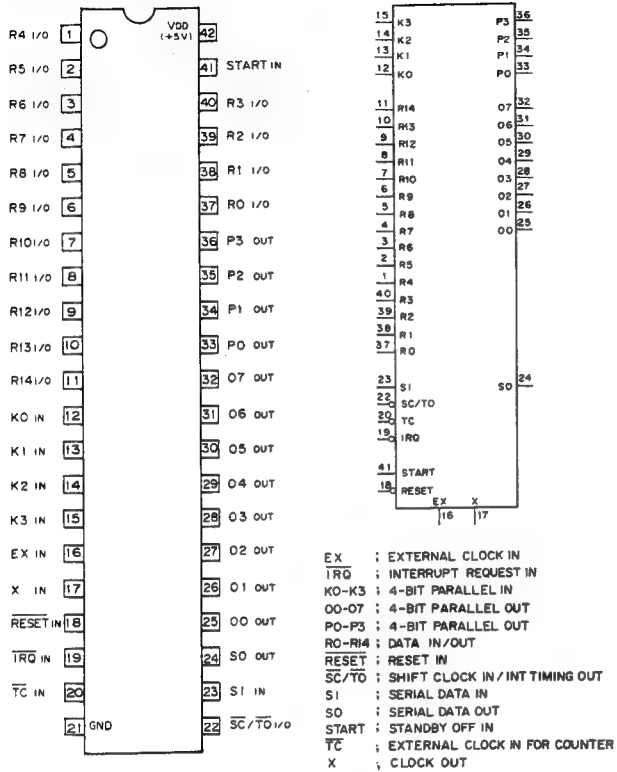
MC14013BCP (MOTOROLA)
C-MOS D-TYPE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



MC1496P (MOTOROLA)
BALANCED MODULATOR/DEMODULATOR
— TOP VIEW —



MB88505H (FUJITSU)

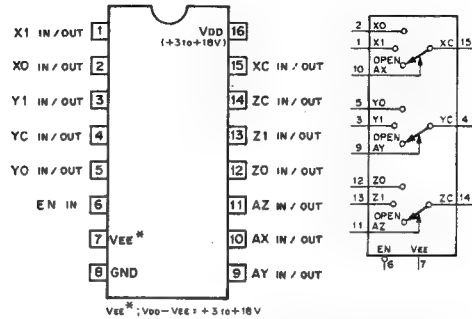
C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
- TOP VIEW -

MC14053BCP (MOTOROLA)

MC14053BF (MOTOROLA) FLAT PACKAGE

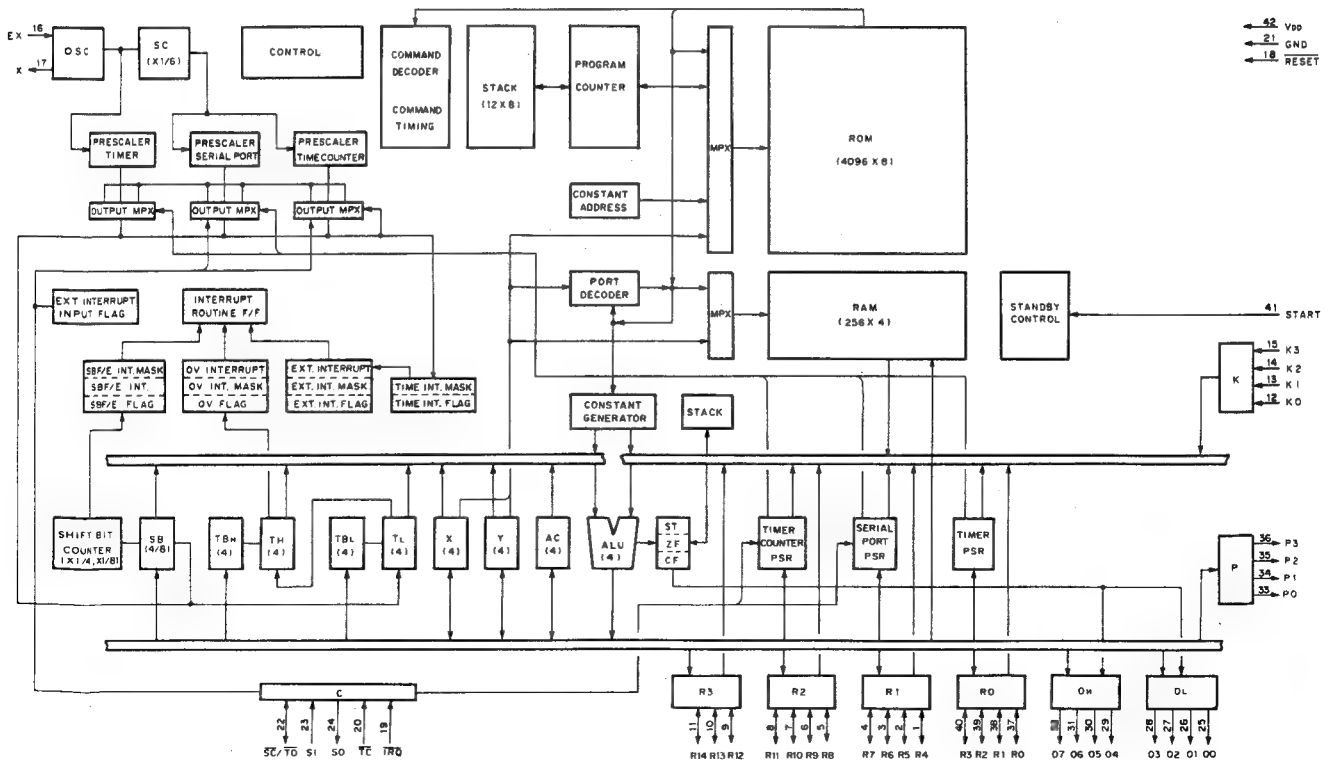
TC4053BF (TOSHIBA) FLAT PACKAGE

TC4053BFH (TOSHIBA) FLAT PACKAGE

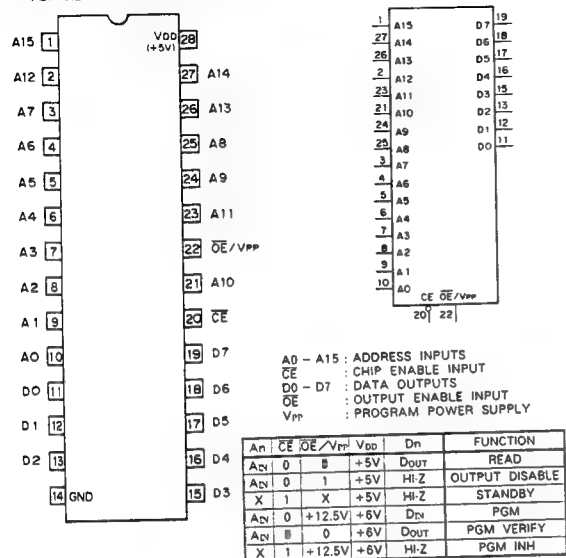
C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER
- TOP VIEW -

CONT. INPUTS	ON
EN A (X,Y,Z)	CHANNEL
0	0
0	1
1	X
1	OPEN

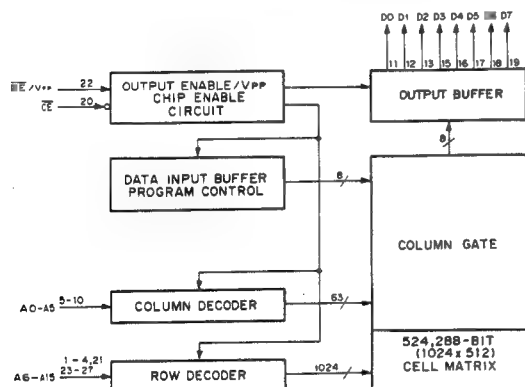
0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE.



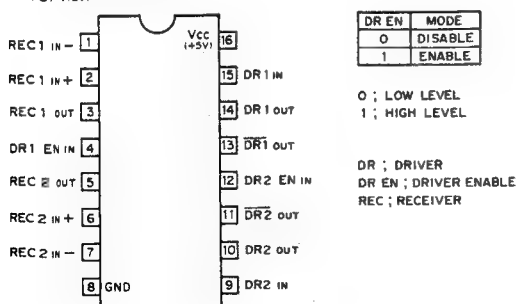
MBM27C512-25 (FUJITSU) (ACCESS TIME = 250ns)
C-MOS 512K (65,536x8 = 524,288) BIT ERASABLE PROM
- TOP VIEW -



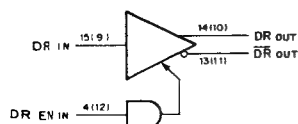
0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE



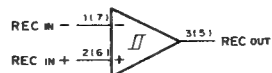
MC34051P (MOTOROLA)
RS-422 DRIVER/RECEIVER
- TOP VIEW -



DRIVER CIRCUIT

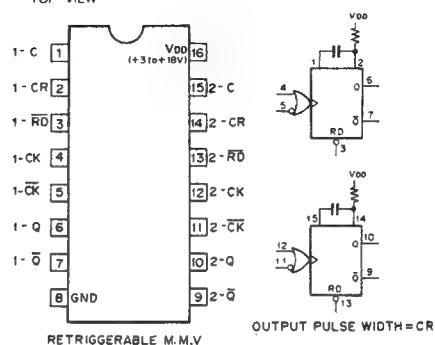


RECEIVER CIRCUIT

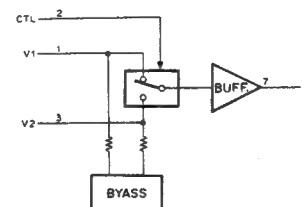
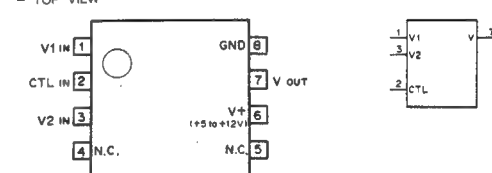


MC14538BCP (MOTOROLA)
TC4538BF (TOSHIBA) FLAT PACKAGE
TC4538BP (TOSHIBA)

C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
- TOP VIEW -



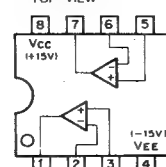
NJM2233AM (JRC) FLAT PACKAGE
2-INPUT SIGNAL VIDEO SWITCH
- TOP VIEW -



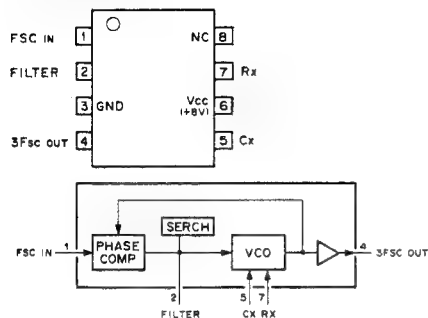
CTL	V
0	V1
1	V2

0: LOW LEVEL
1: HIGH LEVEL

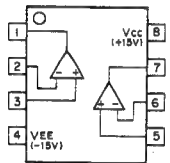
NJM4558M (JRC) FLAT PACKAGE
OPERATIONAL AMPLIFIER
- TOP VIEW -



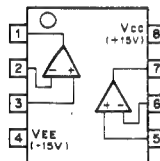
NJM2238M (JRC) FLAT PACKAGE
3-TIMES OSCILLATOR
- TOP VIEW -



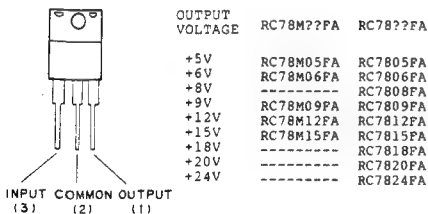
NJM4562D (JRC)
NJM4562M (JRC) FLAT PACKAGE
OPERATIONAL AMPLIFIER
- TOP VIEW -



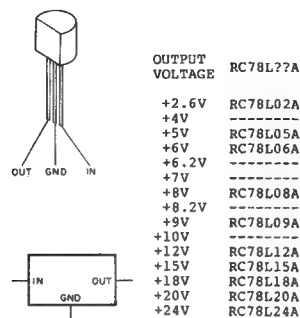
RC4560DD (RAYTHEON)
OPERATIONAL AMPLIFIER
- TOP VIEW -



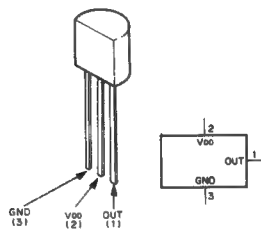
RC78M ??FA (RAYTHEON)
RC78 ? ??FA (RAYTHEON)
POSITIVE VOLTAGE REGULATOR
- FRONT VIEW -



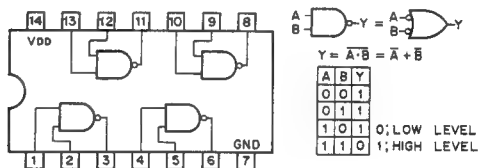
RC78L ??A (RAYTHEON)
POSITIVE VOLTAGE REGULATOR (100mA)



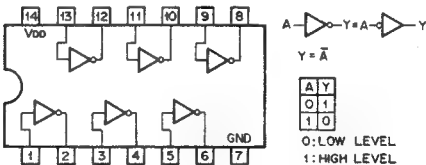
S-8054ALB (SEIKO)
C-MOS VOLTAGE DETECTOR



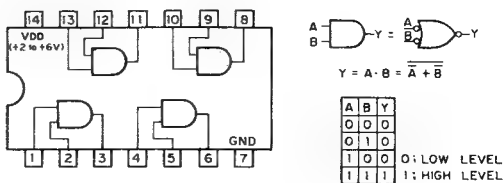
SN74HC00NS (TI) ($V_{cc} = +2$ to $+6V$) FLAT PACKAGE
C-MOS QUAD 2-INPUT NAND GATE
- TOP VIEW -



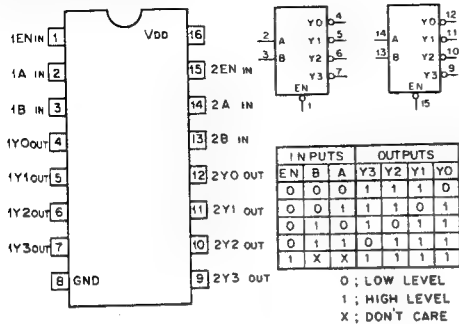
SN74HC04N (TI) ($V_{cc} = +2$ to $+6V$)
TC74HC04F (TOSHIBA) ($V_{cc} = +2$ to $+6V$) FLAT PACKAGE
C-MOS HEX INVERTER
- TOP VIEW -



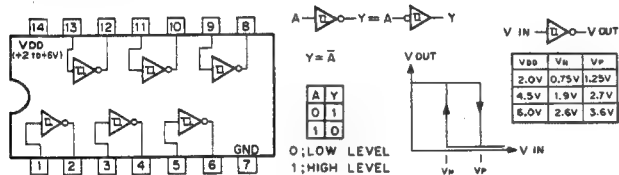
SN74HC08N (TI)
C-MOS QUAD 2-INPUT AND GATE
- TOP VIEW -



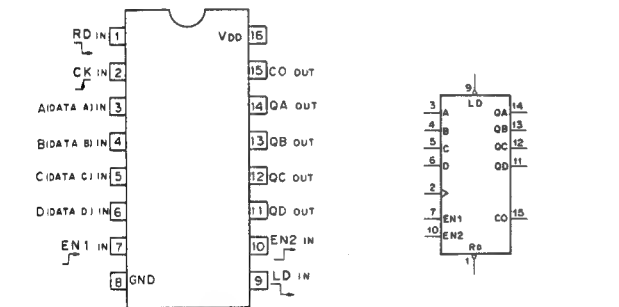
SN74HC139N (TI) ($V_{DD} = +2$ to $+6V$)
C-MOS 1-OF-4 DECODER/DEMULTIPLEXER
— TOP VIEW —



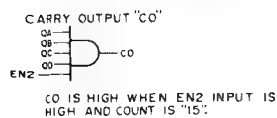
SN74HC14N (TI)
SN74HC14NS (TI) FLAT PACKAGE
C-MOS SCHMITT TRIGGER INVERTER
— TOP VIEW —



SN74HC163NS (TI) ($V_{DD} = +2$ to $+6V$) FLAT PACKAGE
C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER
— TOP VIEW —

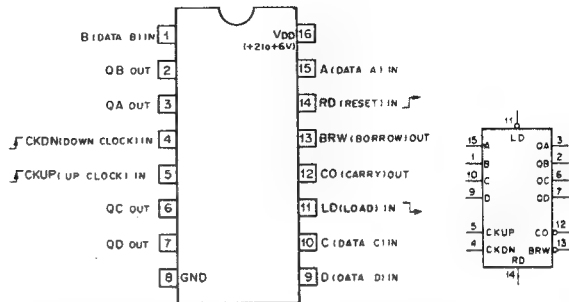


MODE SELECTION				
CONTROL INPUTS				MODE
R ₀	LD	EN ₁	EN ₂	
0	X	X	X	RESET (SYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT



COUNT SEQUENCE				
COUNT	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

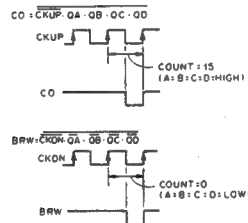
SN74HC193N (TI)
C-MOS PRESETTABLE SYNCHRONOUS 4-BIT UP/DOWN COUNTER
— TOP VIEW —



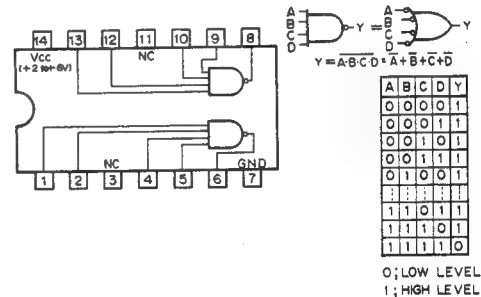
CONTROL INPUT				MODE
RD	LD	CKUP	CKDN	
1	X	X	X	RESET TO ZERO
0	0	X	X	PRESET
0	1	1	1	UP COUNT
0	1	1	0	DOWN COUNT
0	1	1	1	NO COUNT

COUNT				
COUNT	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

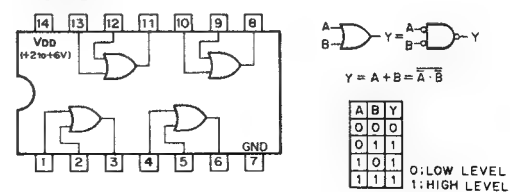
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE



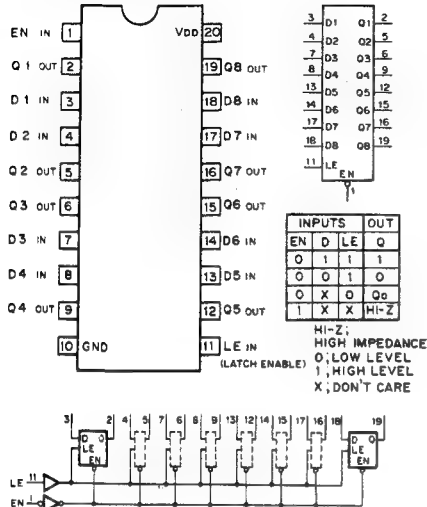
SN74HC20N (TI)
C-MOS 4-INPUT POSITIVE-NAND GATE
— TOP VIEW —



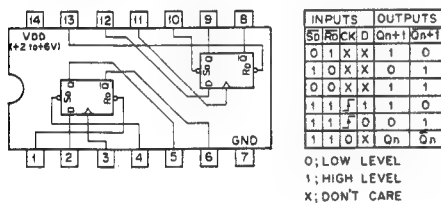
SN74HC32N (TI)
C-MOS 2-INPUT OR GATE
— TOP VIEW —



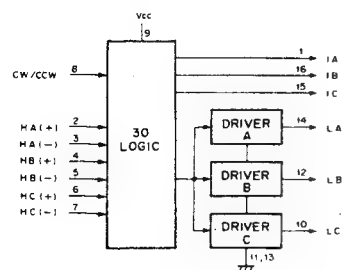
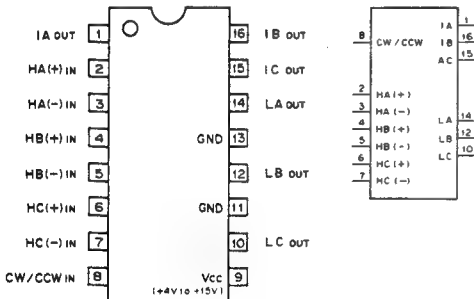
SN74HC373N (TI) ($V_{DD} = +2$ to $+6V$)
C-MOS 3-STATE OUTPUTS OCTAL LATCHES
— TOP VIEW —



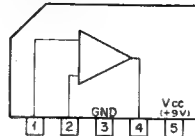
SN74HC74N (TI)
SN74HC74NS (TI) FLAT PACKAGE
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET
— TOP VIEW —



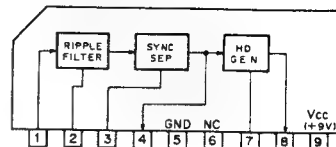
TA7745F (TOSHIBA) FLAT PACKAGE
DC MOTOR DRIVER
— TOP VIEW —



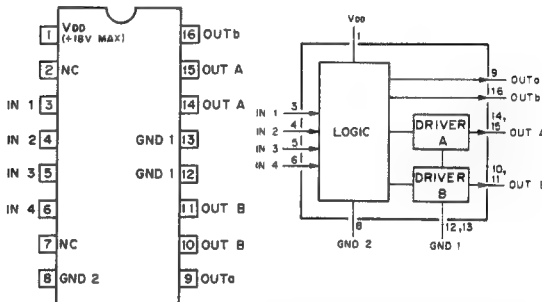
TA7060AP (TOSHIBA)
LINEAR AMP
— SIDE VIEW —



TA7357AP (TOSHIBA)
SYNC SEPARATOR/HD PULSE GENERATOR
— SIDE VIEW —



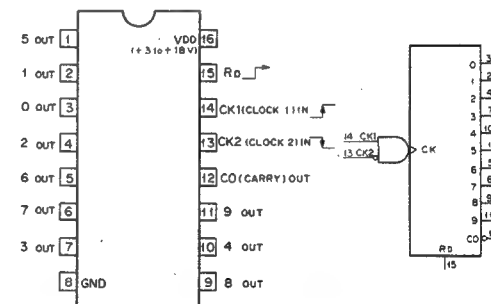
TA7733F (TOSHIBA) FLAT PACKAGE
FUNCTIONABLE BRIDGE DRIVER
— TOP VIEW —



CONTROL	INPUTS				OUTPUTS				MODE
	IN1	IN2	IN3	IN4	OUTa	OUTb	OUTc	OUTd	
2-INPUT CONTROL	1	0	1	1	ON	—	ON	—	FWD
	0	1	1	1	—	ON	—	ON	REV
	1	1	1	1	ON	ON	—	—	BRAKE
	0	0	1	1	—	—	—	—	STOP
1-INPUT CONTROL	1	0	0	1	ON	—	ON	—	A ON
	0	0	0	1	—	ON	—	ON	B ON
	X	1	0	1	ON	ON	—	—	AB ON
				0	—	—	—	—	INHIBIT

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

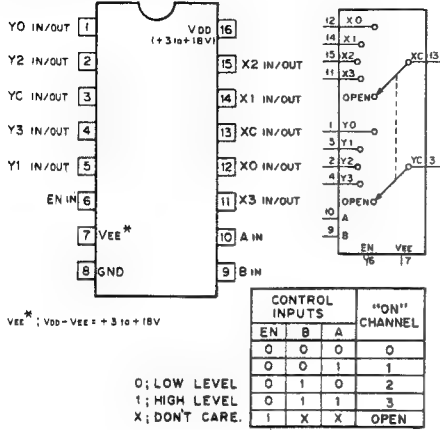
TC4017BP (TOSHIBA)
C-MOS DECADE COUNTER/DIVIDER
— TOP VIEW —



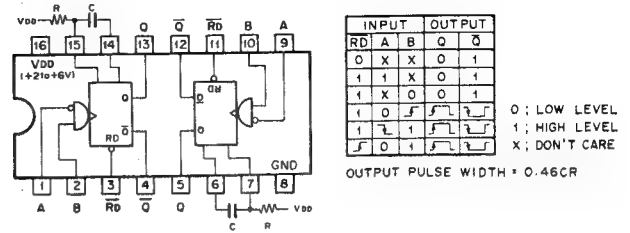
COUNT	INPUTS				OUTPUTS			
	RD	CK1	CK2	CO	Q0	Q1	Q2	Q3
0	1	X	0	0	0	0	0	0
1	0	—	0	0	0	0	0	1
2	0	—	0	0	0	0	1	0
3	0	—	0	0	0	1	0	0
4	0	—	0	0	1	0	0	0
5	0	—	0	0	1	0	0	0
6	0	—	0	0	1	0	0	0
7	0	—	0	0	1	0	0	0
8	0	—	0	1	0	0	0	0
9	0	—	1	0	0	0	0	0
NO COUNT	0	1						
	0	0						

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

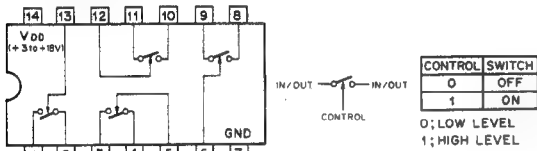
TC4052BFH (TOSHIBA) FLAT PACKAGE
C-MOS DUAL 4-CHANNEL ANALOG MULTIPLEXER/DEMULPLEXER
- TOP VIEW -



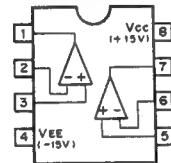
TC74HC123F (TOSHIBA) FLAT PACKAGE
C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR
- TOP VIEW -



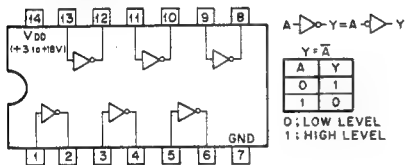
TC4066BF (TOSHIBA) FLAT PACKAGE
C-MOS BILATERAL ANALOG SWITCH
- TOP VIEW -



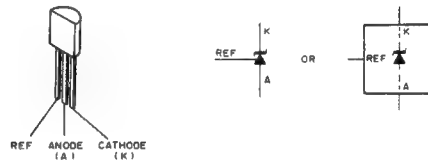
TL082CP (TI)
OPERATIONAL AMPLIFIER
(J FET-INPUT)
- TOP VIEW -



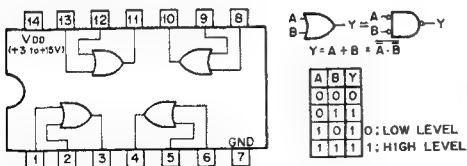
TC4069UBP (TOSHIBA)
C-MOS INVERTER
- TOP VIEW -



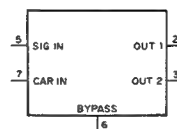
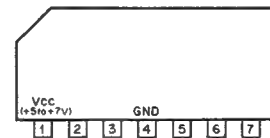
TL431CLP (TI)
ADJUSTABLE PRECISION SHUNT REGULATOR



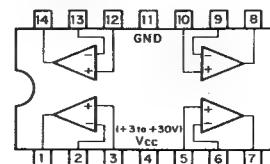
TC4071BP (TOSHIBA)
C-MOS 2-INPUT OR GATE
- TOP VIEW -



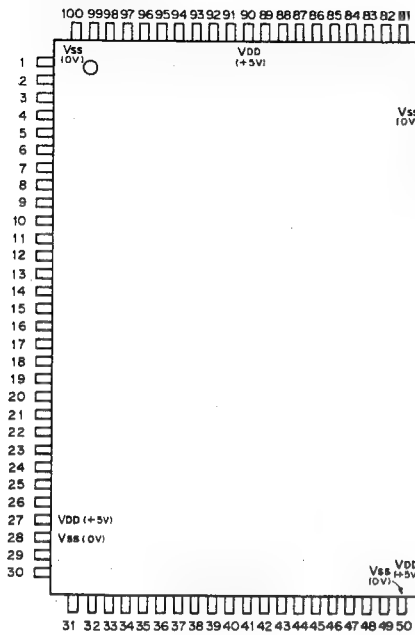
uPC1037HA (NEC)
DOUBLE-BALANCED MODULATOR
- SIDE VIEW -



uPC324G2 (NEC) FLAT PACKAGE
QUAD. OP. AMPLIFIER
- TOP VIEW -

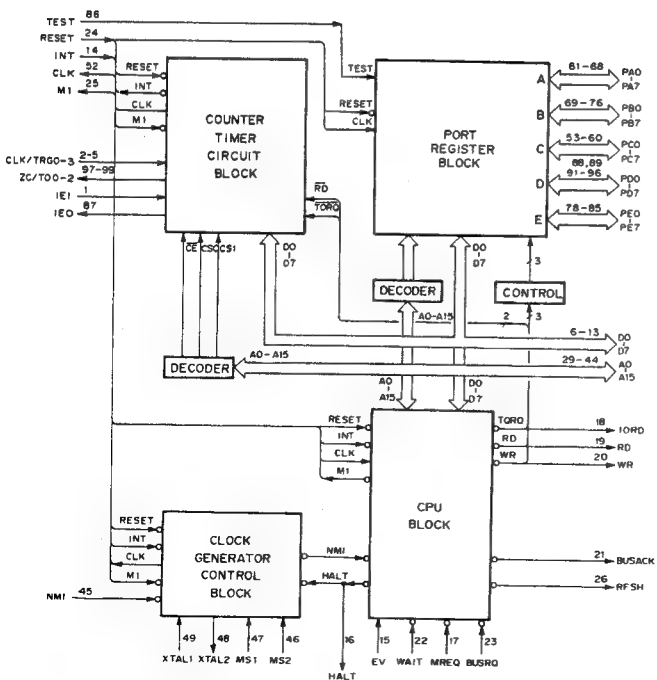


TMPZ84C011AF (TOSHIBA)
C-MOS 8 BIT MICROPROCESSOR
— TOP VIEW —

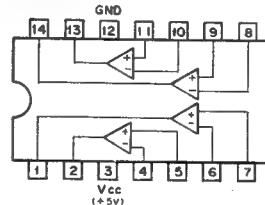


NO.	IN	OUT	SYMBOL	NO.	IN	OUT	SYMBOL
1			IE1	51			Vcc
2			CLK/TRG3	52			CLK
3			CLK/TRG2	53			PC7
4			CLK/TRG1	54			PC6
5			CLK/TRG0	55			PC5
6			D7	56			PC4
7			D6	57			PC3
8			D5	58			PC2
9			D4	59			PC1
10			D3	60			PC0
11			D2	61			PA7
12			D1	62			PA6
13			D0	63			PA5
14			INT	64			PA4
15			EV	65			PA3
16			HALT	66			PA2
17			MREQ	67			PA1
18			IORD	68			PA0
19			RD	69			PB7
20			WR	70			PB6
21			BUSACK	71			PB5
22			WAIT	72			PB4
23			BUSREQ	73			PB3
24			RESET	74			PB2
25			MT	75			PB1
26			RFSH	76			PB0
27			Vcc	77			Vss
28			Vss	78			PE7
29			A0	79			PE6
30			A1	80			PE5
31			A2	81			PE4
32			A3	82			PE3
33			A4	83			PE2
34			A5	84			PE1
35			A6	85			PE0
36			A7	86			TEST
37			A8	87			IE0
38			A9	88			PD7
39			A10	89			PD6
40			A11	90			Vcc
41			A12	91			PD5
42			A13	92			PD4
43			A14	93			PD3
44			A15	94			PD2
45			NMI	95			PD1
46			MS2	96			PD0
47			MS1	97			ZC/T02
48			XTAL2	98			ZC/T01
49			XTAL1	99			ZC/T00
50			Vss	100			Vss

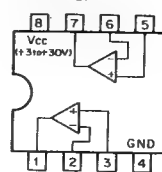
60	PA0	A0	29	A0-A15	3-STATE ADDRESS BUS OUTPUTS
61	PA1	A1	30	BUSACK	BUS ACKNOWLEDGE OUTPUT
62	PA2	A2	31	BUSREQ	BUS REQUEST INPUT
63	PA3	A3	32	CLK	CLOCK OUTPUT
64	PA4	A4	33	CLK/TRG0-3	EXTERNAL CLOCK / TIMER TRIGGER0-3 INPUTS
65	PA5	A5	34	D0-D7	3-STATE DATA BUS INPUTS/OUTPUTS
66	PA6	A6	35	EV	EVALUATOR INPUT
67	PA7	A7	36	HALT	HALT OUTPUT
68	PB0	A8	37	IE1/IE0	CTC INTERRUPT ENABLE INPUT/OUTPUT
69	PB1	A9	38	INT	MASKABLE INTERRUPT REQUEST INPUT
70	PB2	A10	39	IORD	3-STATE I/O REQUEST OUTPUT
71	PB3	A11	40	M1	3-STATE MACHINE CYCLE 1 OUTPUT
72	PB4	A12	41	MREQ	3-STATE REQUEST OUTPUT
73	PB5	A13	42	MS1/MS2	MODE SELECT 1/2 INPUTS
74	PB6	A14	43	NMI	NON-MASKABLE INTERRUPT REQUEST INPUT
75	PB7	A15	44	PA0-PA7	3-STATE I/O PORT
76	PC0	D0	13	PB0-PB7	
77	PC1	D1	12	PC0-PC7	
78	PC2	D2	11	PDO-PD7	
79	PC3	D3	10	PE0-PE7	3-STATE READ OUTPUT
80	PC4	D4	9	RD	
81	PC5	D5	8	RESET	RESET INPUT
82	PC6	D6	7	RFSH	REFRESH OUTPUT
83	PC7	D7	6	TEST	TEST INPUT
84	PD0			WAIT	WAIT REQUEST INPUT
85	PD1			WR	3-STATE WRITE OUTPUT
86	PD2			ZC/T00-2	ZERO COUNT/TIME OUT 0-2 OUTPUTS
87	PD3				
88	PD4				
89	PD5				
90	PD6				
91	PD7				
92	PE0				
93	PE1				
94	PE2				
95	PE3				
96	PE4				
97	PE5				
98	PE6				
99	PE7				
100					



uPC339C (NEC)
COMPARATOR
— TOP VIEW —

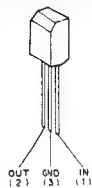


uPC358C (NEC)
uPC358G2 (NEC) FLAT PACKAGE
DUAL OPERATIONAL AMPLIFIERS
— TOP VIEW —

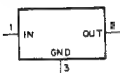


μPC78L??A (NEC)

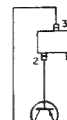
POSITIVE VOLTAGE REGULATOR (100mA)



OUTPUT VOLTAGE	μPC78L??	μPC78L??A
5V	μPC78L05	μPC78L05A
6V		
8V	μPC78L08	
9V		
12V	μPC78L12	
15V	μPC78L15	



2SA1115



2SA1122
2SA1162
2SA1226
2SA812



2SA1175

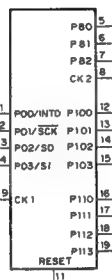
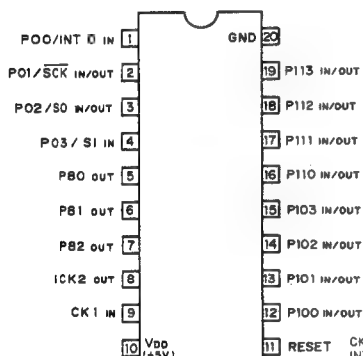


2SA1385

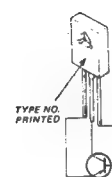
μPD7564 (NEC)

C-MOS SINGLE CHIP 4-BIT MICROCOMPUTER

~ TOP VIEW ~



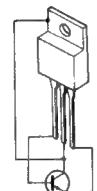
CK1, CK2 : SYSTEM CLOCK INPUTS
INT0 : TESTABLE INPUT
P00 - P03 : PORT 0 INPUTS/OUTPUTS
P80 - P82 : PORT 8 OUTPUTS
P100 - P103 : PORT 10 INPUTS/OUTPUTS
P110 - P113 : PORT 11 INPUTS/OUTPUTS
RESET : RESET INPUT
SCK : SERIAL CLOCK
SI : SERIAL DATA INPUT
SO : SERIAL DATA OUTPUT



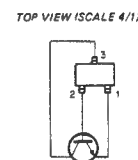
2SB649A



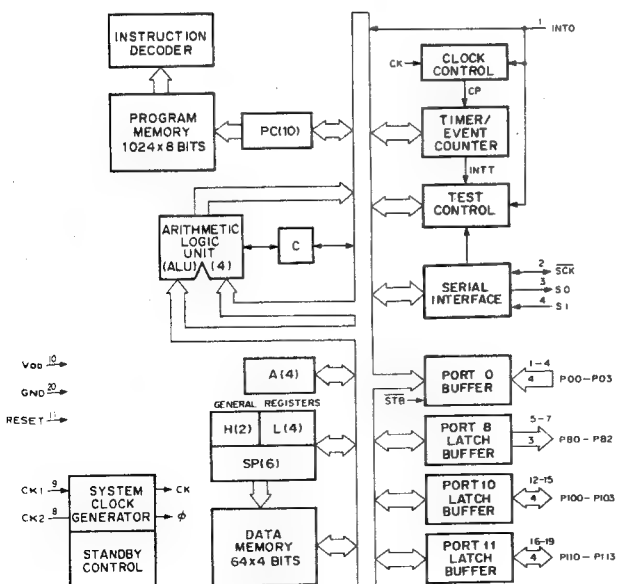
2SB733



2SB856



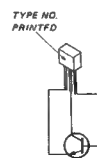
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2SC2223
2SC2714
2SC3926
2SC3735



2SC1815
2SC2878



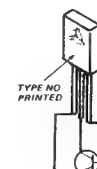
2SC1826



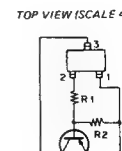
2SC2785
2SC2785E



2SC3327
2SC403SP

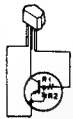


2SD669A

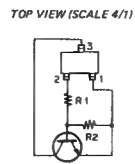


DTA114EK (R1 = 10K, R2 = 10K)
DTA124EK (R1 = 22K, R2 = 22K)
DTA144EK (R1 = 47K, R2 = 47K)

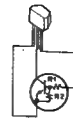
TRANSISTOR, DIODE



DTA124XS (R1=22K, R2=47K)
DTA143XS (R1=4.7K, R2=10K)
DTA144ES (R1=47K, R2=47K)

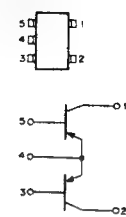


DTC114EK (R1 = 10K, R2 = 10K)
DTC124EK (R1 = 22K, R2 = 22K)
DTC144EK (R1 = 47K, R2 = 47K)



DTC144ES (R1=47K, R2=47K)

(SCALE 6/1)
TOP VIEW



FMS2

(SCALE 6/1)
TOP VIEW



FMW1

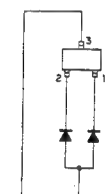


NJL7141E



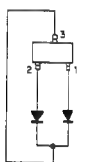
10E-2
1SS119
1SS133

TOP VIEW (SCALE 4/1) 1S2835



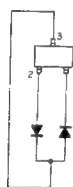
TOP VIEW (SCALE 4/1)

1S2837



TOP VIEW (SCALE 4/1)

1SS123



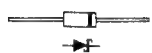
TOP VIEW (SCALE 4/1)

1SS193



TOP VIEW (SCALE 4/1)

1SS196

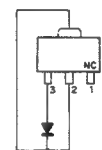


1SS97
1SS99



1T33C

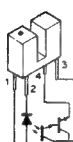
TOP VIEW (SCALE 4/1) E10DS2



FC54M

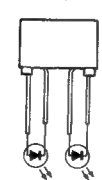


GL-5HD5 : RED



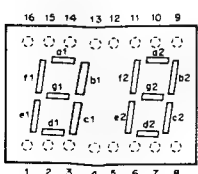
GP-1L52
GP-1L53

-SIDE VIEW-
(SCALE 2/1)

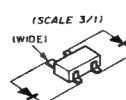
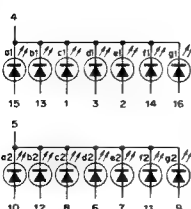


LT-9200D : RED
LT-9200H : YELLOW

DUAL 7-SEGMENT LED
- TOP VIEW -

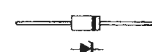


LB402VK (ROHM)



(SCALE 3/1)
(WIDE)

MA159



RD??ESB?



TLG124A : GREEN



TLG256 : GREEN
TLY256 : YELLOW



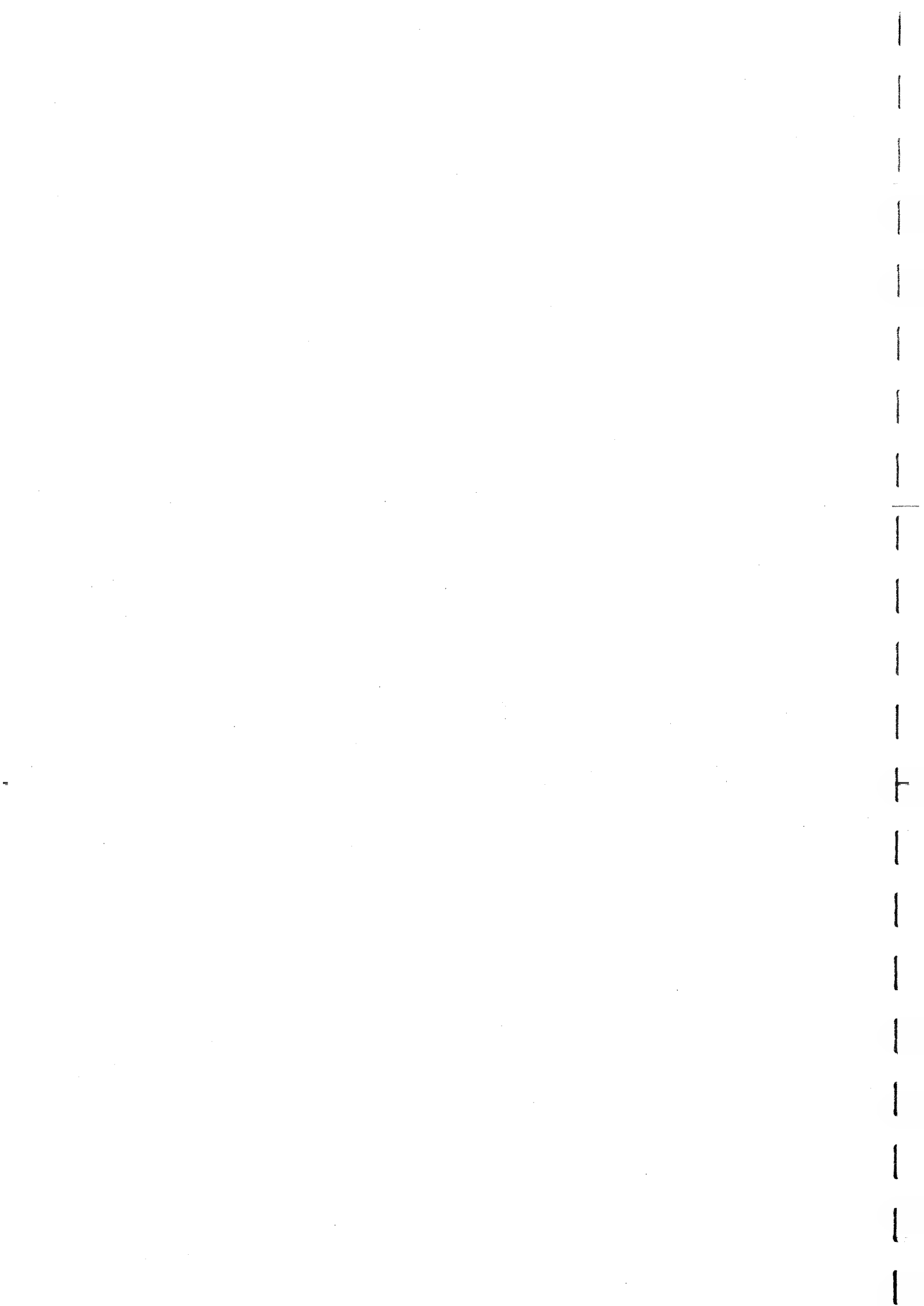
TLUG144 : GREEN
TLUY144 : YELLOW



TLUG154 : GREEN



U05E



SECTION 13
PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

CIRCUIT FUNCTION OF THE PRINTED CIRCUIT BOARDS

Mechanical deck

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	FR-43	Head Amp/Flying Erase
	HK-5	Y/C Video process
	RP-73	REC/PB Head Amp (LP)
	RP-103	REC/PB Head Amp (SP)
AUDIO	MB-19	PCM Audio
	PA-27	PCM Audio Analog
	PD-19	PCM Audio Digital
SYSCON SERVO	TS-74	Tape Top/End Sensor
	IG-4	Terminal
	LD-1	Tape Sensor
	MS-4	Mode Switch
	LS-9	Loading Switch
	RS-31	Mechanism Control
	MD-23P	Capstan/Drum Drive
	SE-10P	Servo, Syscon
Others	FP-84	Connection
	FP-206	Connection
	FP-122	Connection

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	YC-46 VO-30	YC Separator Video Interface
AUDIO	AU-127 AA-16	Audio Input/Output Amp XLR Input/Output Amp
SYSCON	SY-145A	System Control
	KY-162	Function Key Board
	DP-101	Display
	DD-12 PTC-32	Display Drive Search Dial
DIGITAL PROCESS	DI-12 DI-13	Digital CNR Read Timing Control Pulse Generator
POWER	DC-45A UR-14E	DC Supply Switching Regulator
Others	LP-52	Mode Display
	CP-141	Connector Panel
	CP-162	S Video Connector Panel
	SW-346	Audio Level Control
	SW-347A	Audio select SW
	SW-348	Remote Panel SW
	MC-28	Mic. Jack
	HP-42	Head phones Level
	MT-57	Audio Meter Level
	RM-83	9-pin Connector

FR-43, RP-103, RP-73 (LP)

FR-43, RP-103, RP-73 (LP)

FR-43; HEAD AMPLIFIER/FLYING ERASE
 RP-103; REC/PB HEAD AMPLIFIER (SP)
 RP-73 (LP); REC/PB HEAD AMPLIFIER (LP)

FR-43(1-635-127-11, 12)C

CN001 C-1
 CN002 E-1
 CN003 E-2
 CN004 A-2

D001 A-1

HIC001 B-2
 HIC002 C-2

IC051 E-1

Q008 B-1
 Q009 A-1
 Q031 E-2
 Q032 D-2
 Q042 D-1

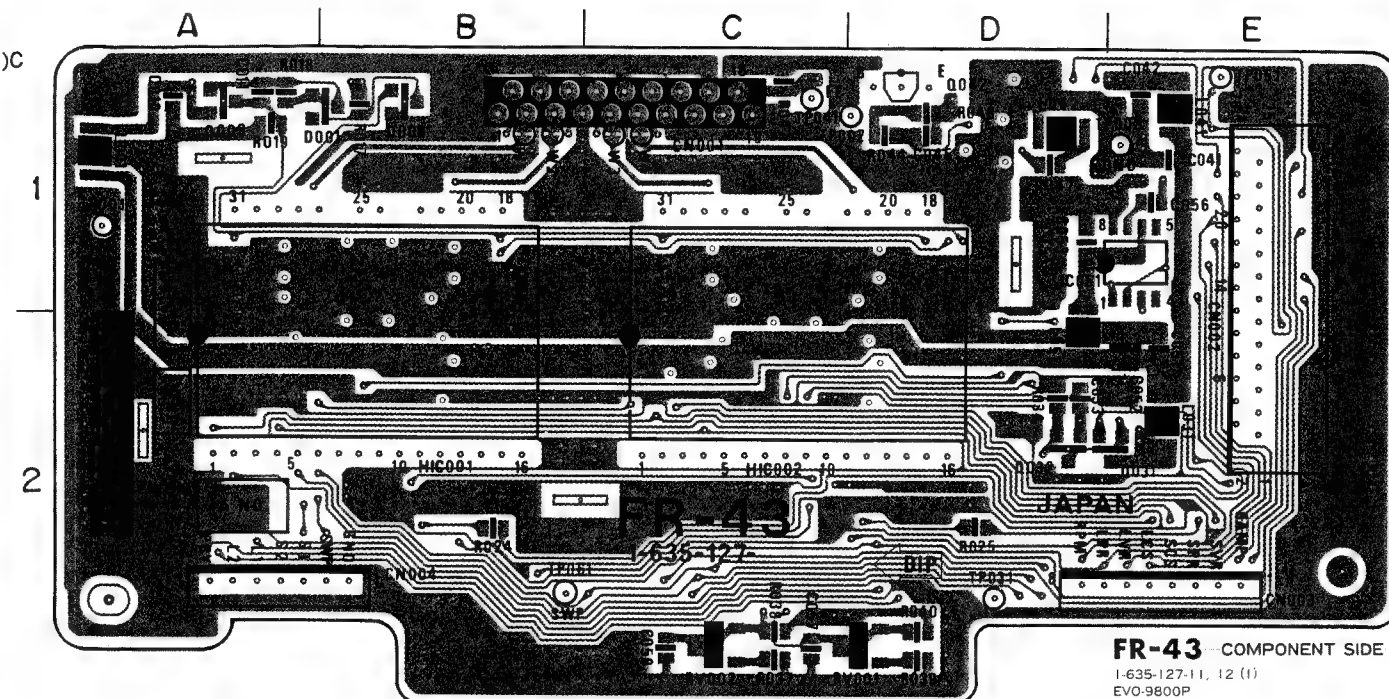
RV001 C-2
 RV002 C-2

TP001 A-1
 TP002 C-1
 TP003 E-1
 TP031 D-2
 TP041 C-1
 TP051 E-1
 TP061 B-2

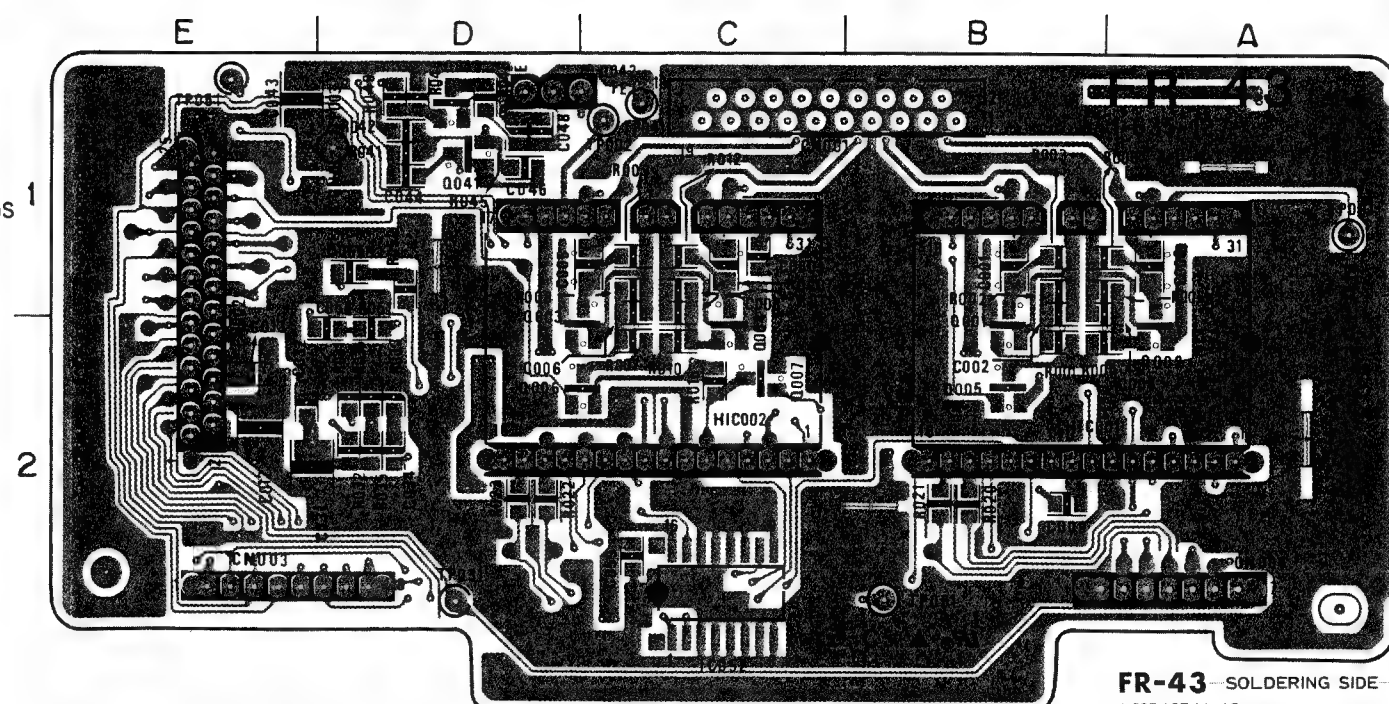
FR-43(1-635-127-11, 12)S

Q001 B-2
 Q002 A-2
 Q003 D-2
 Q004 C-2
 Q005 B-2
 Q006 D-2
 Q007 C-2
 Q041 D-1
 Q043 D-1

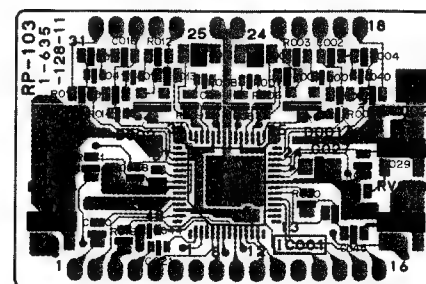
IC052 C-2



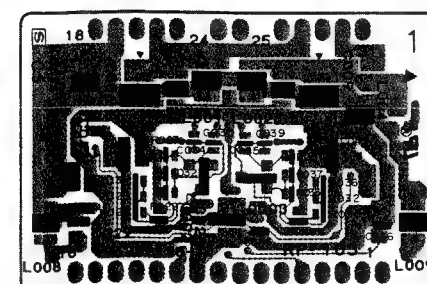
FR-43 COMPONENT SIDE
 1-635-127-11, 12 (I)
 EVO-9800P



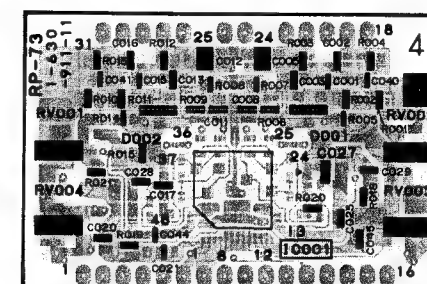
FR-43 SOLDERING SIDE
 1-635-127-11, 12
 EVO-9800P



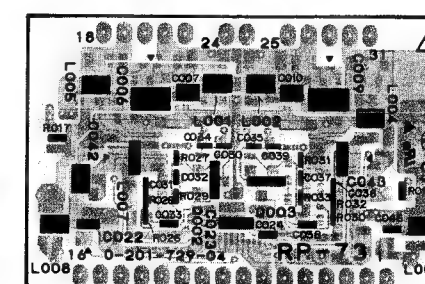
RP-103 COMPONENT SIDE
 1-635-128-11 (I)
 EVO-9800P



RP-103 SOLDERING SIDE
 1-635-128-11 (I)
 EVO-9800P



RP-73(LP) COMPONENT SIDE
 1-630-911-11 (I)
 EVO-9800
 EVO-9800P

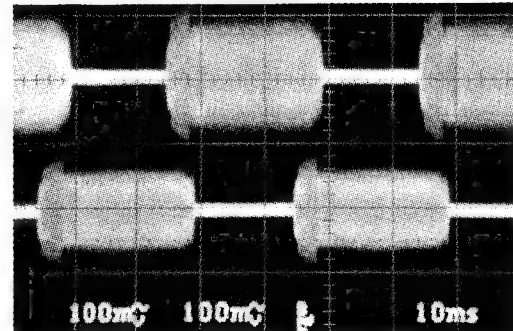


RP-73(LP) SOLDERING SIDE
 1-630-911-11 (I)
 EVO-9800
 EVO-9800P

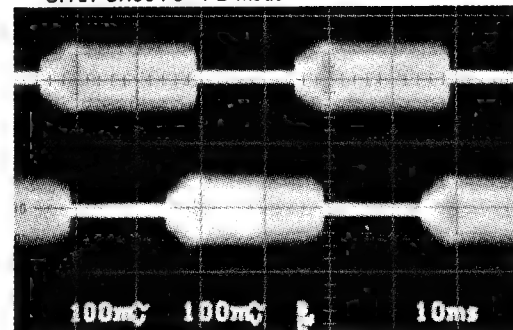
FR-43; HEAD AMPLIFIER/FLYING ERASE
RP-103; REC/PB HEAD MAPLIFIER (SP)
RP-73 (LP); REC/PB HEAD AMPLIFIER (LP)

FR-43

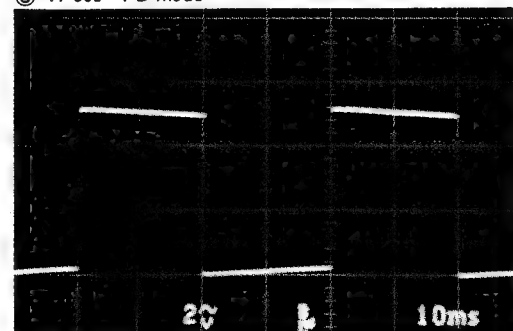
① CH-1: CN004-3
 CH-2: CN004-4 PB mode



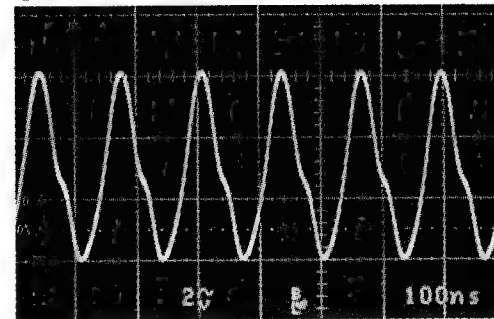
② CH-1: CN004-5
 CH-2: CN004-6 PB mode



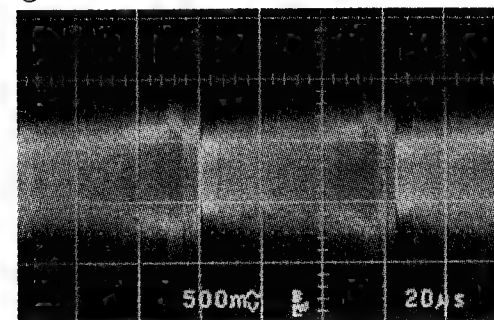
③ TP061 PB mode



④ TP041 REC mode

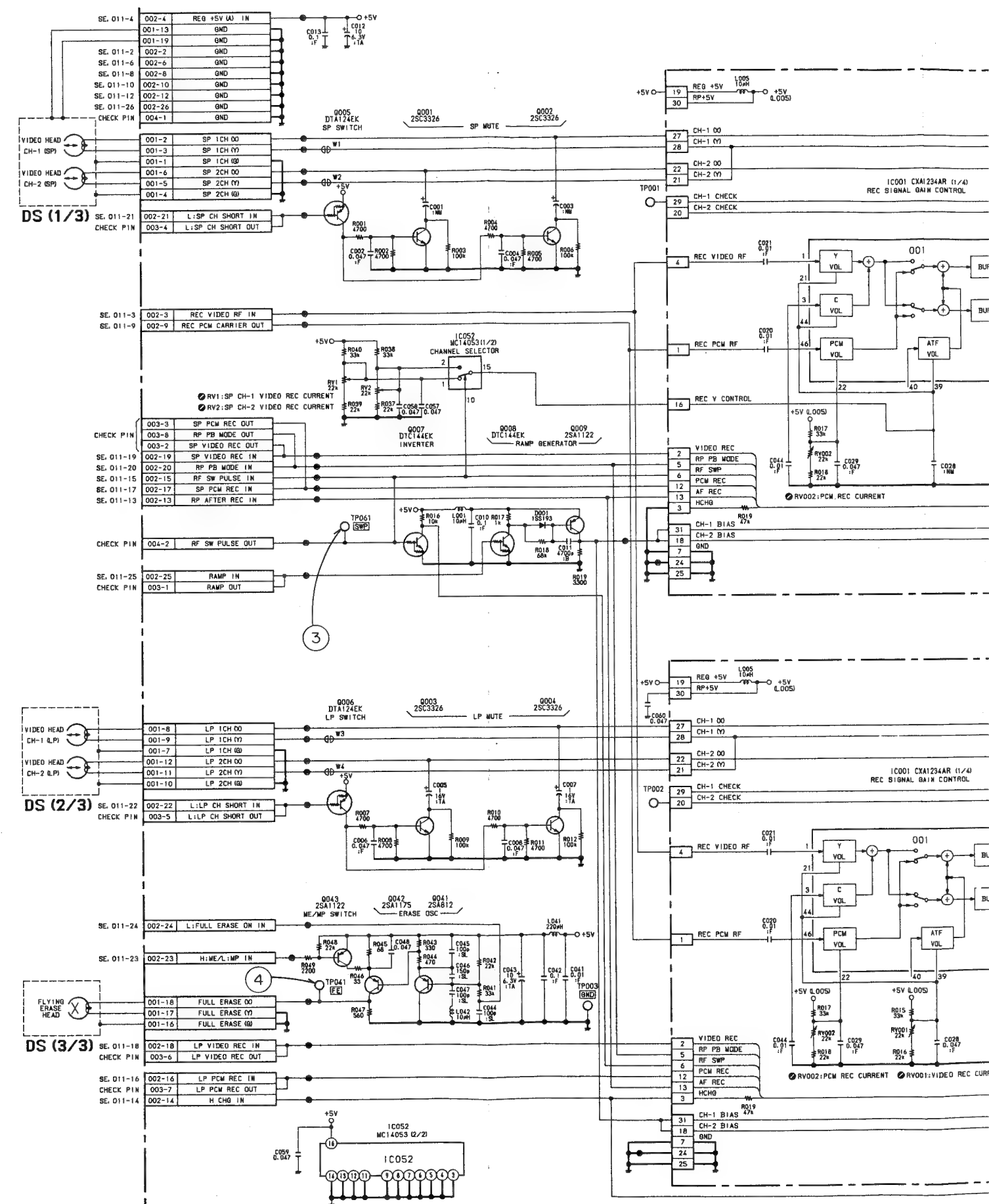


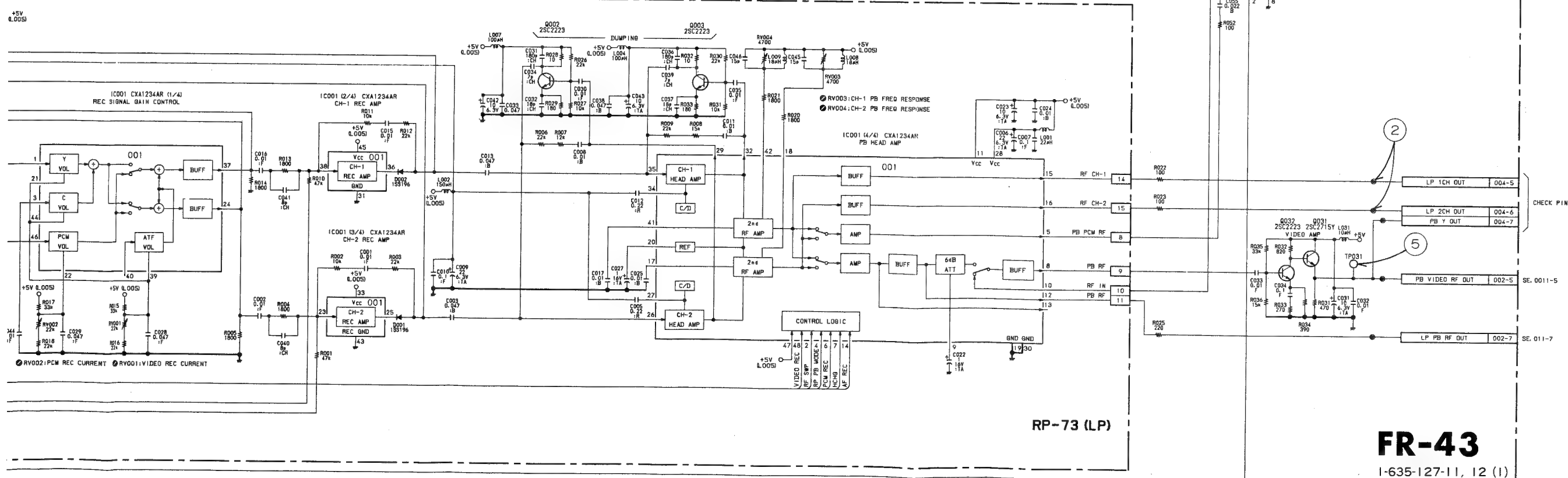
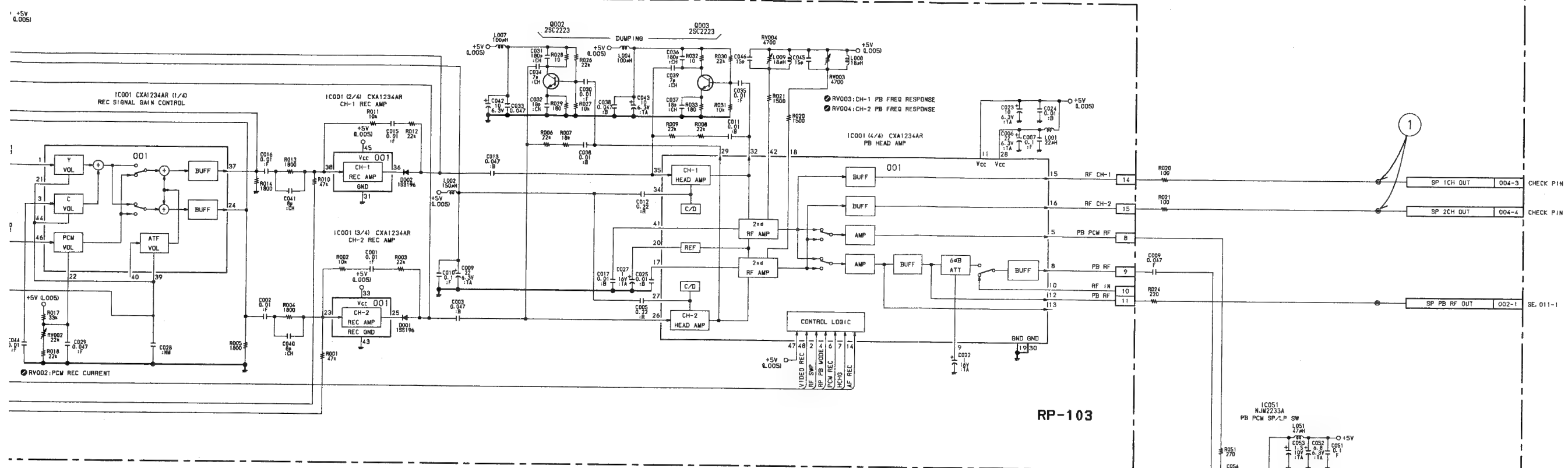
⑤ TP031 PB mode



Measurement Condition

- Input Signal : Color Bars
- Cassette Tape : Alignment tape WR5-8CSE
 Alignment tape WR5-8CLE
 (Color Bars Signal)

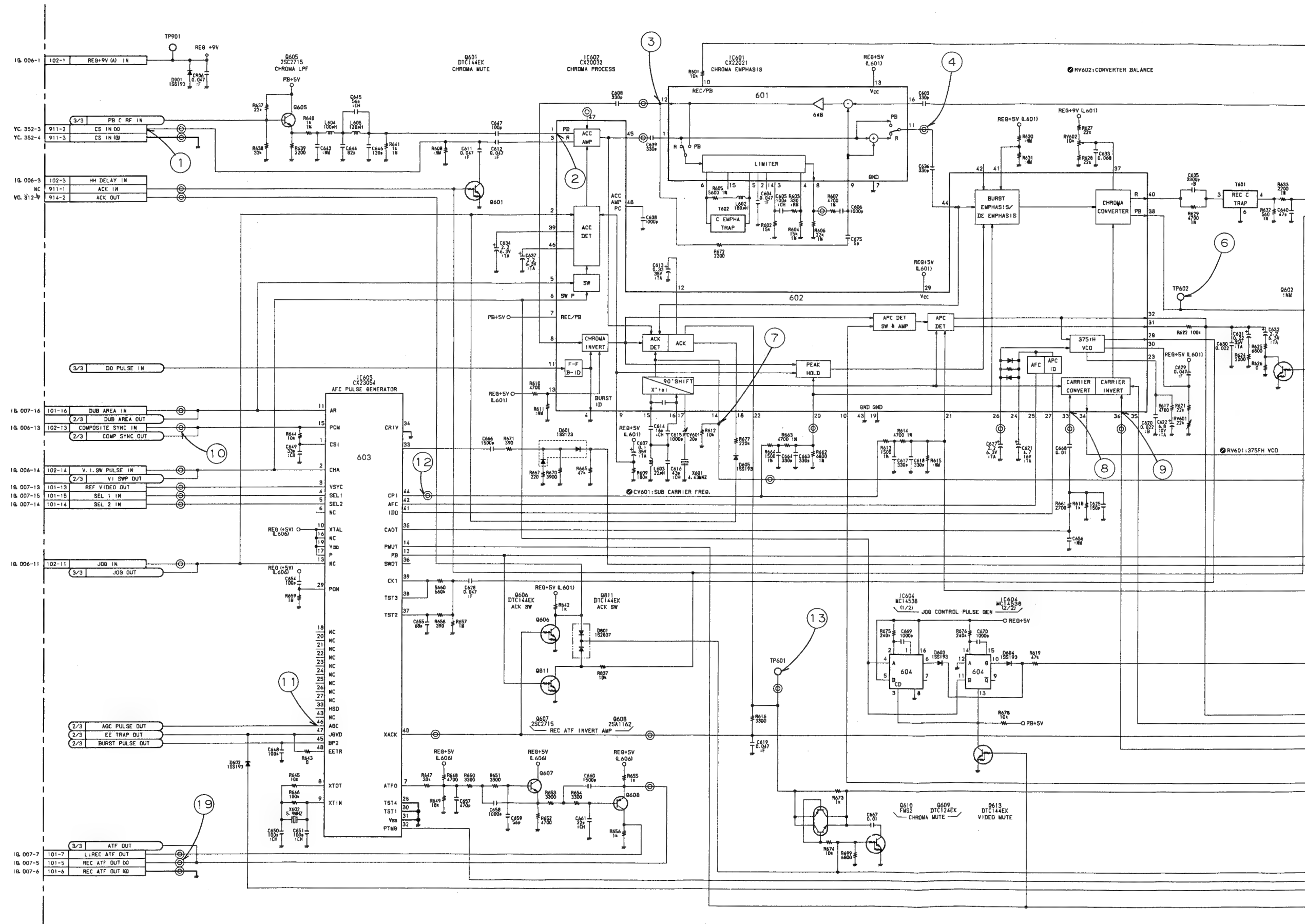


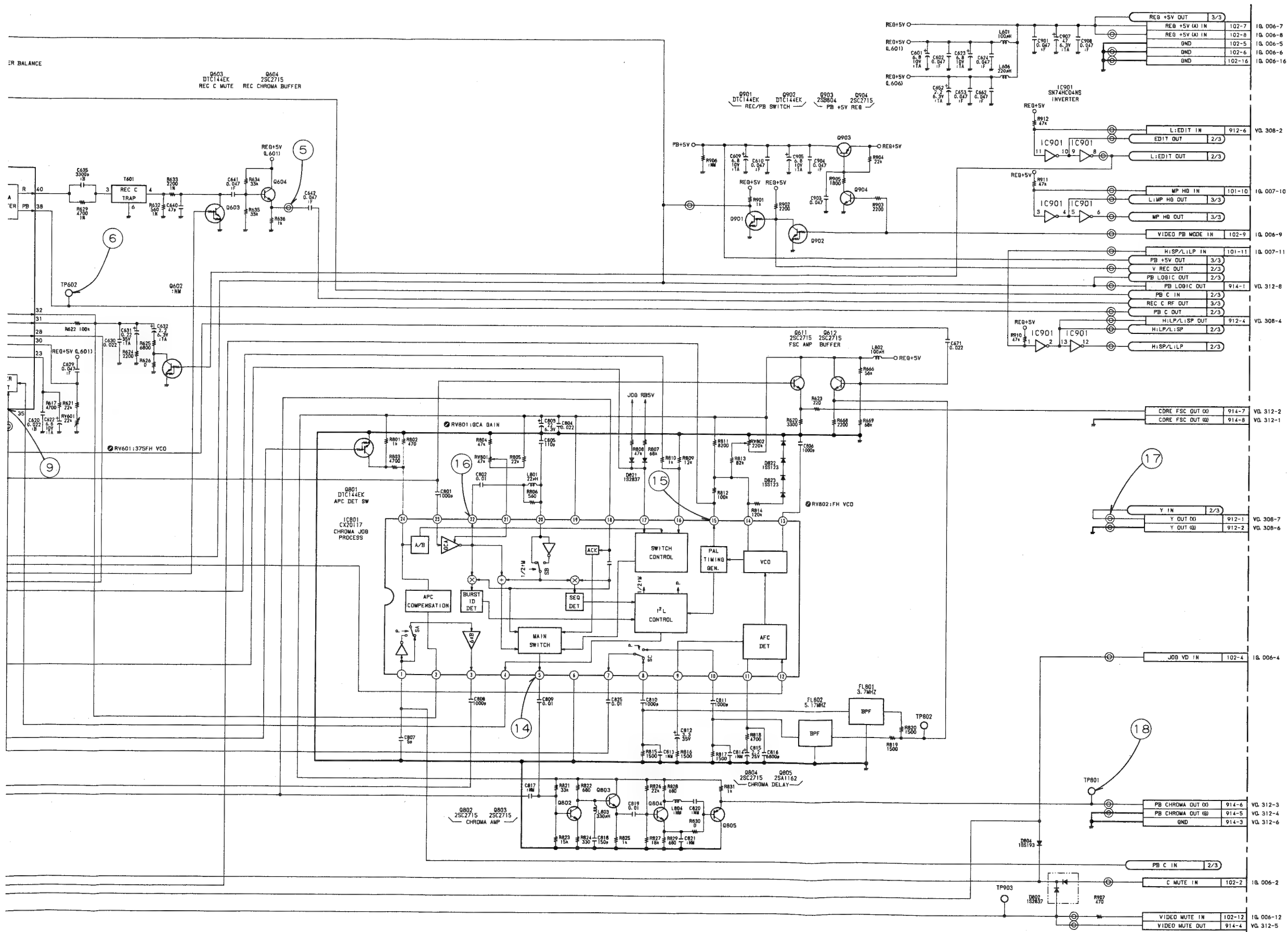


FR-43

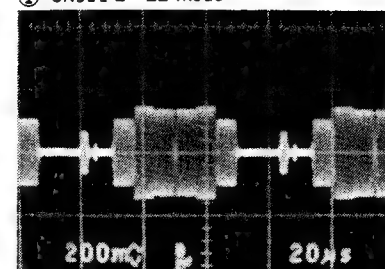
I-635-127-11, 12 (I)
EVO-9800P

NOTE: NM IS NOT MOUNT

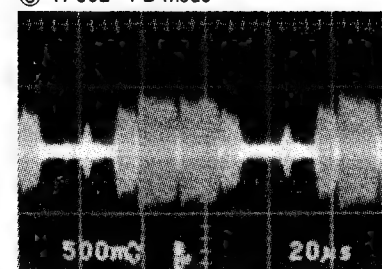




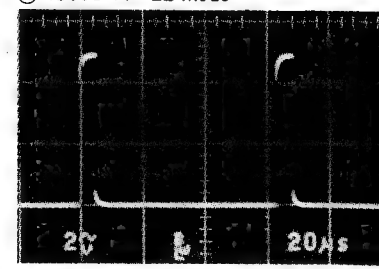
① CN911-2 EE mode



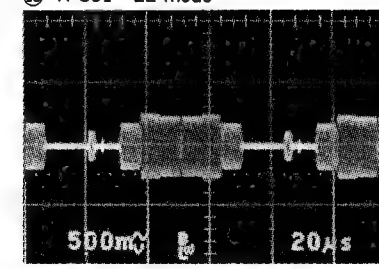
⑥ TP602 PB mode



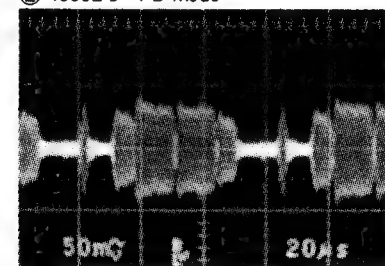
⑫ IC603-44 EE mode



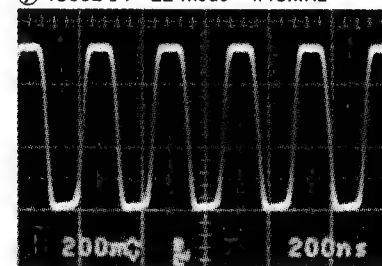
⑮ TP801 EE mode



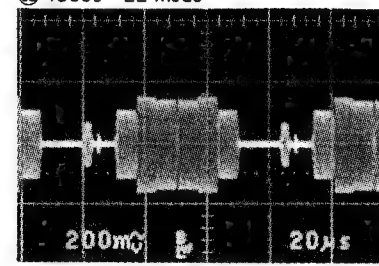
② IC602-1 PB mode



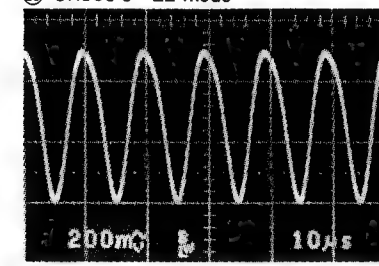
⑦ IC602-14 EE mode 4.43MHz



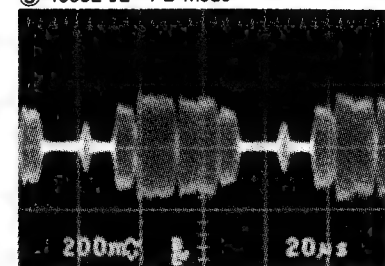
⑬ IC601 EE mode



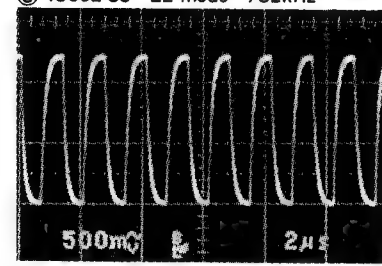
⑰ CN101-5 EE mode



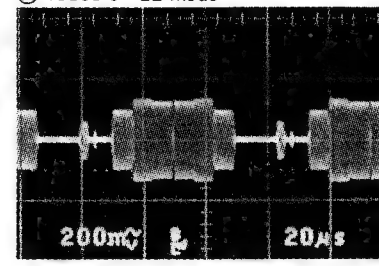
③ IC602-12 PB mode



⑧ IC602-33 EE mode 732kHz



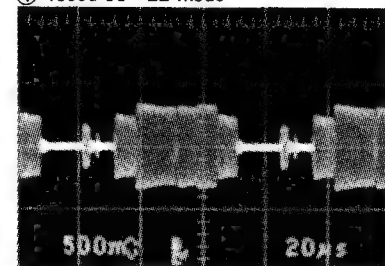
⑭ IC801-5 EE mode



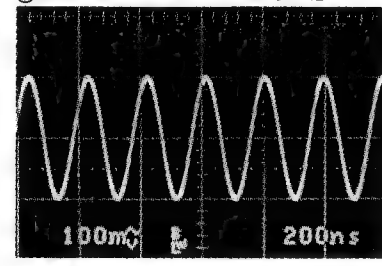
Measurement Condition

- Input Signal : Color Bars
- Cassette Tape : Alignment tape WR5-8CSE (Color Bars Signal)

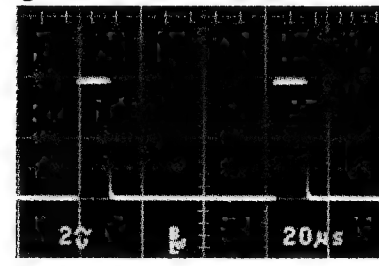
④ IC601-11 EE mode



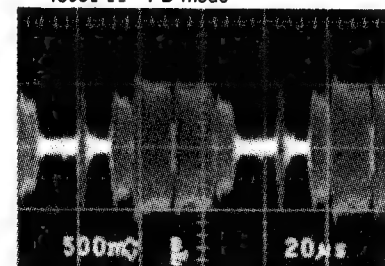
⑨ IC602-36 EE mode 5.16MHz



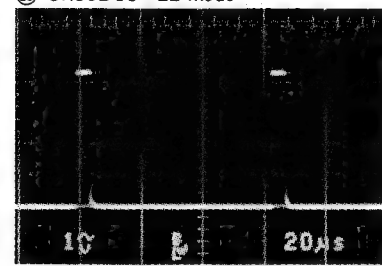
⑱ IC801-15 EE mode 15.625kHz



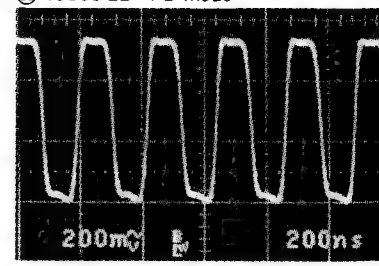
IC601-11 PB mode



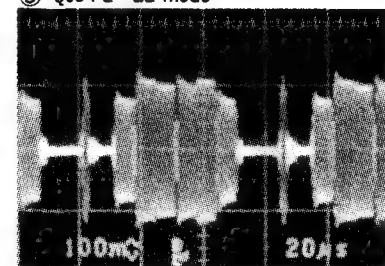
⑩ CN102-13 EE mode



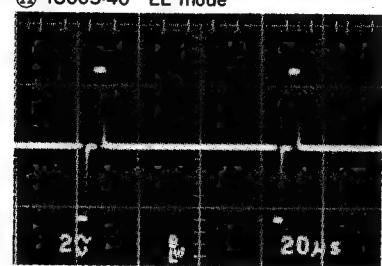
⑲ IC801-22 PB mode



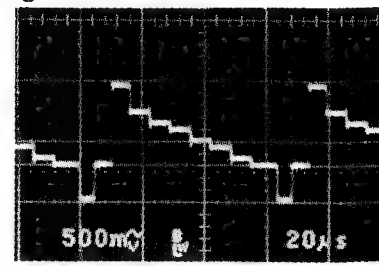
⑤ Q604-E EE mode

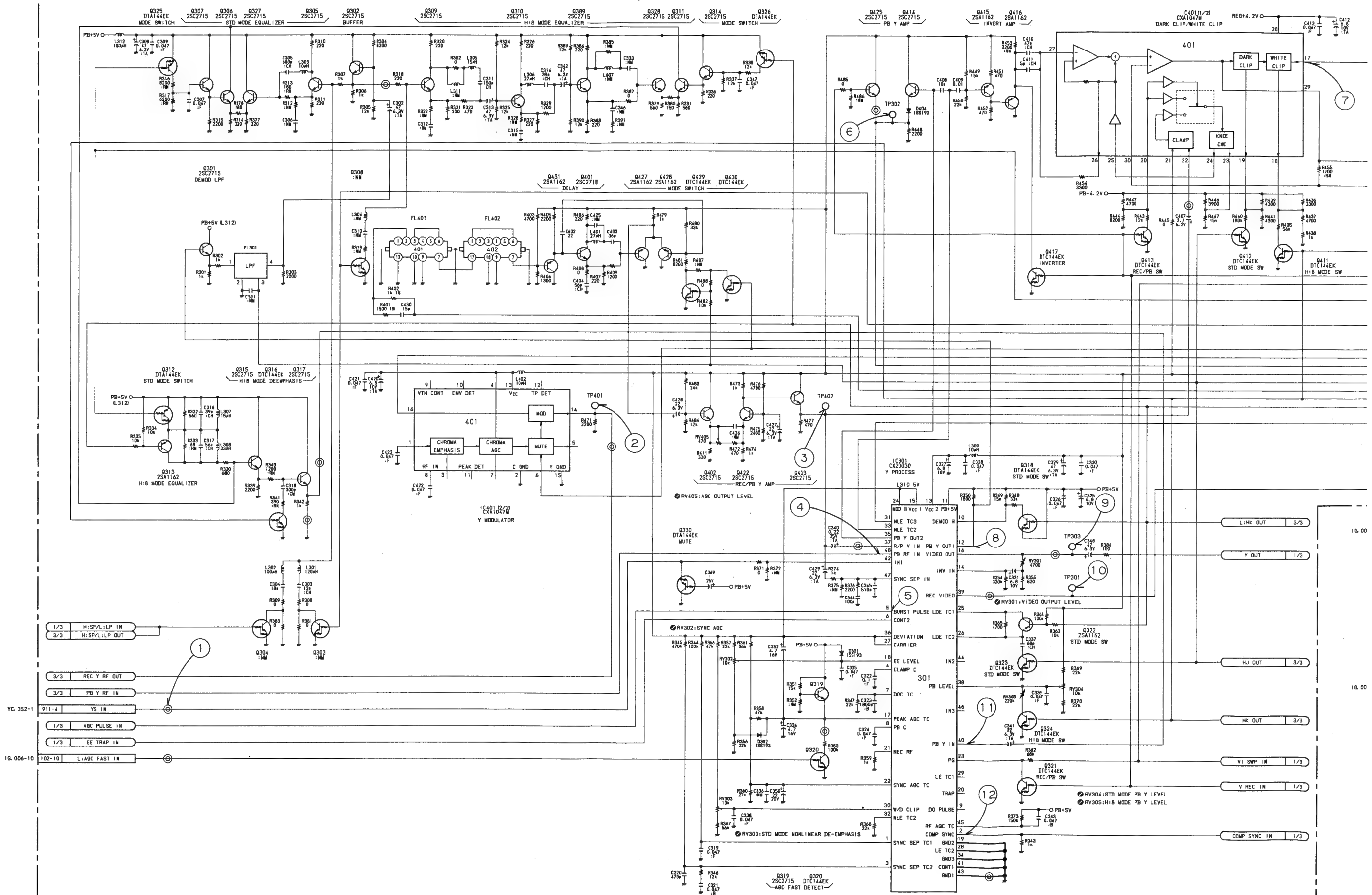


⑪ IC603-46 EE mode



⑰ CN912-1 EE mode

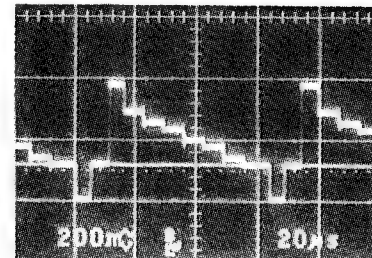




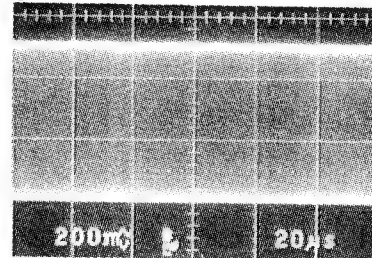


1-635-126-11(1)
EVO-9800P

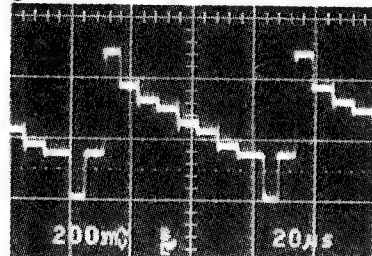
① CN911-4 EE mode



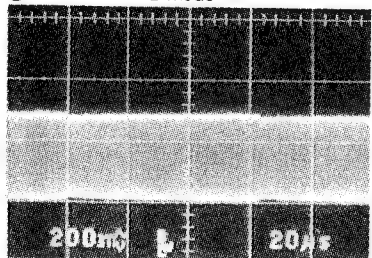
② TP401 EE mode



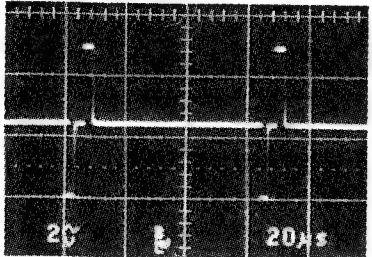
③ TP402 EE mode



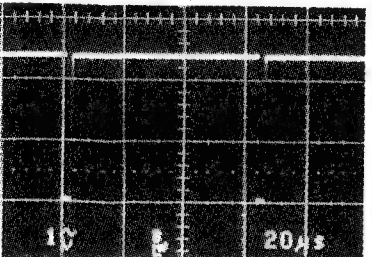
④ IC301-48 EE mode



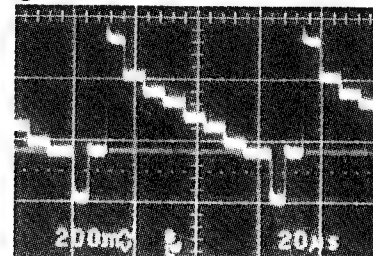
⑤ IC301-5 EE mode



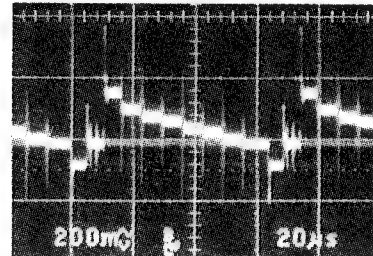
IC301-5 PB mode



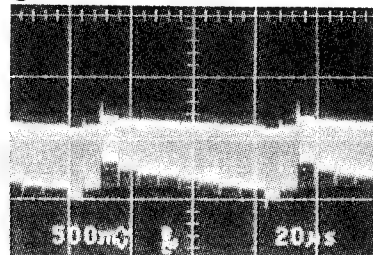
⑥ TP302 PB mode



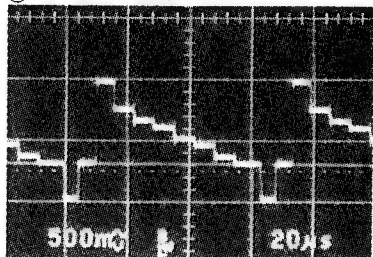
⑦ IC401-17 EE mode



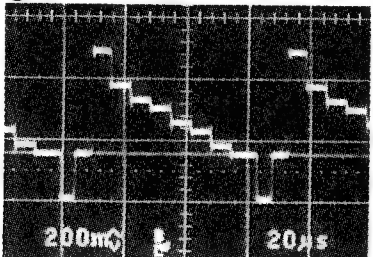
⑧ IC301-12 PB mode



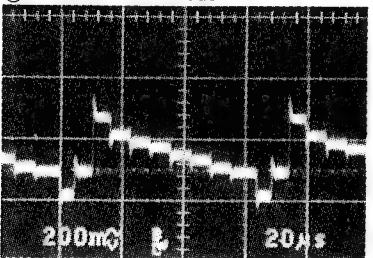
⑨ TP303 EE mode



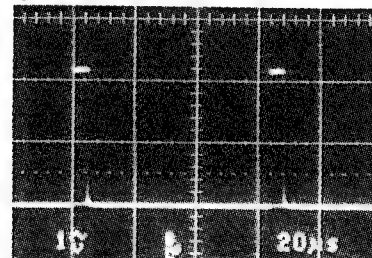
⑩ TP301 EE mode



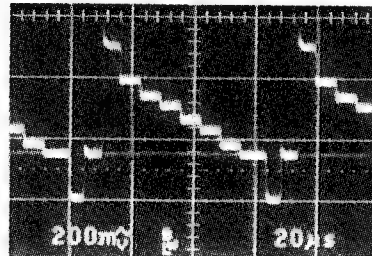
⑪ IC301-40 PB mode



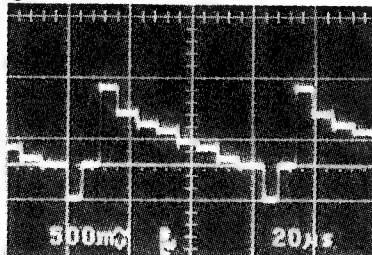
⑫ IC301-2 EE mode



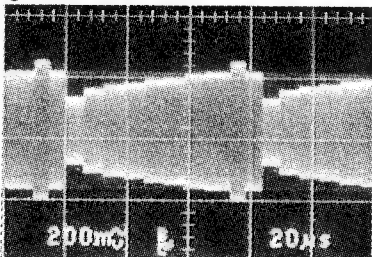
⑬ IC501-44 PB mode



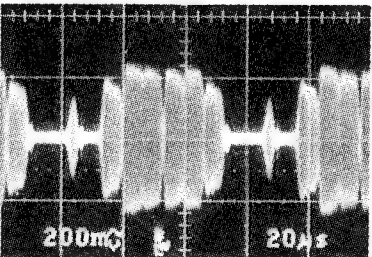
⑭ IC501-18 EE mode



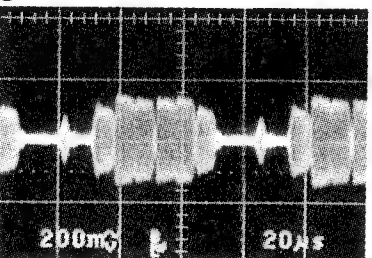
⑮ IC501-2 EE mode



⑯ IC501-42 PB mode



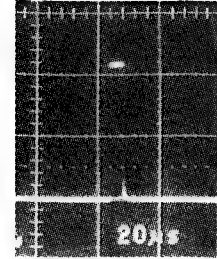
⑰ T501 PB mode



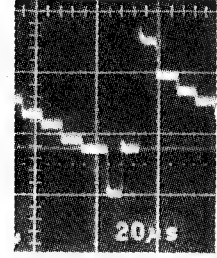
Measurement Condition

- Input Signal : Color Bars
- Cassette Tape : Alignment tape WR5-8CSE
(Color Bars Signal)

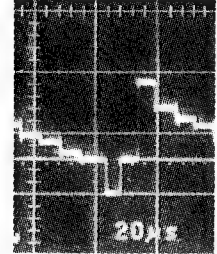
mode



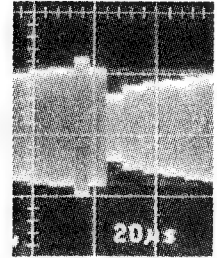
mode



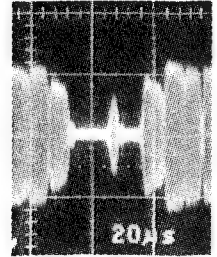
mode



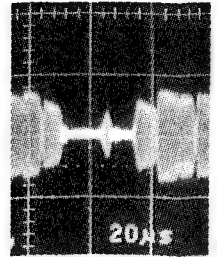
mode



mode

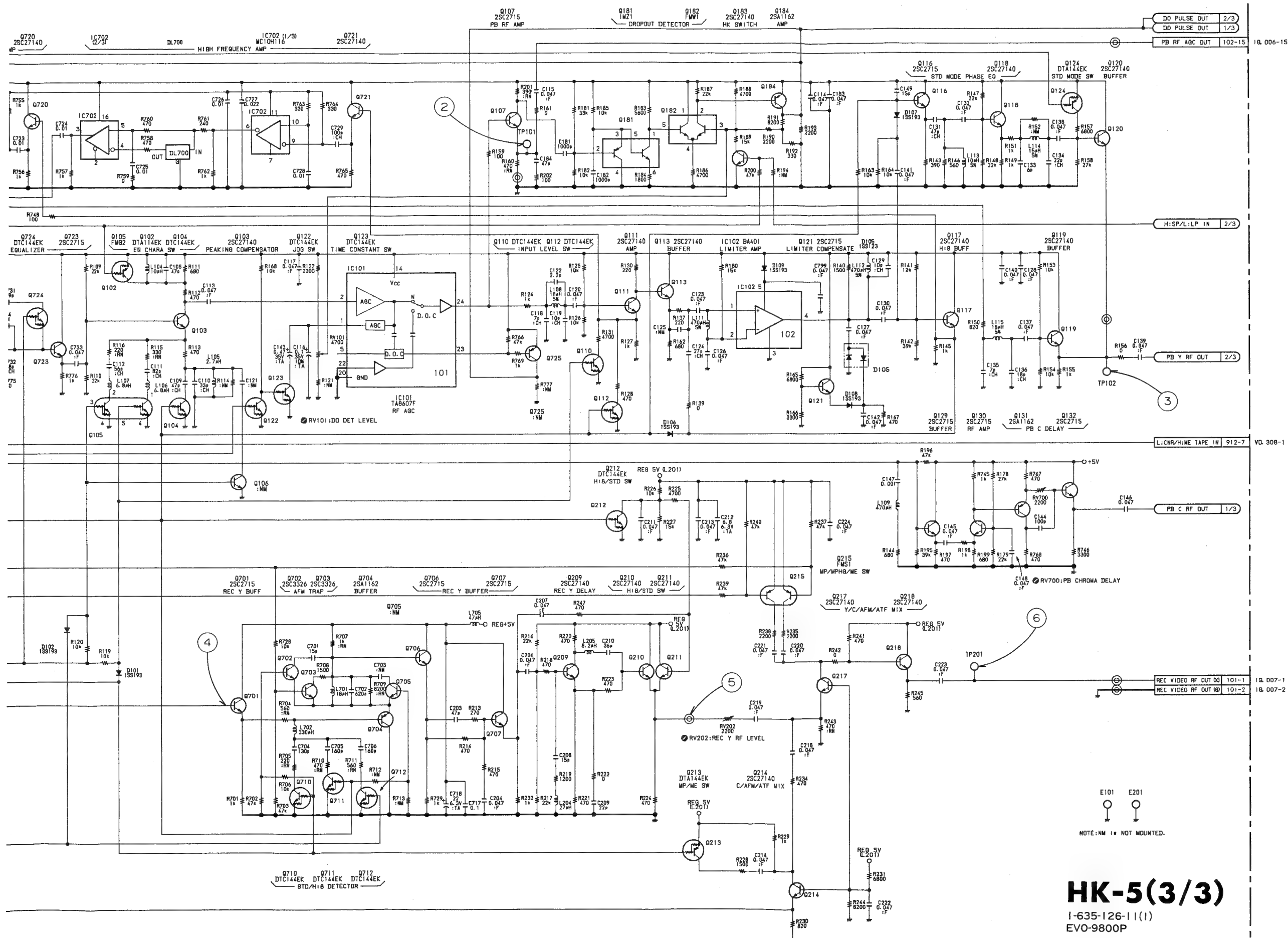


e



Measurement Condition

- Input Signal : Color Bars
- Cassette Tape : Alignment tape WR5-8CSE
(Color Bars Signal)



HK-5(3/3)

1-635-126-11(1)
EVO-9800P

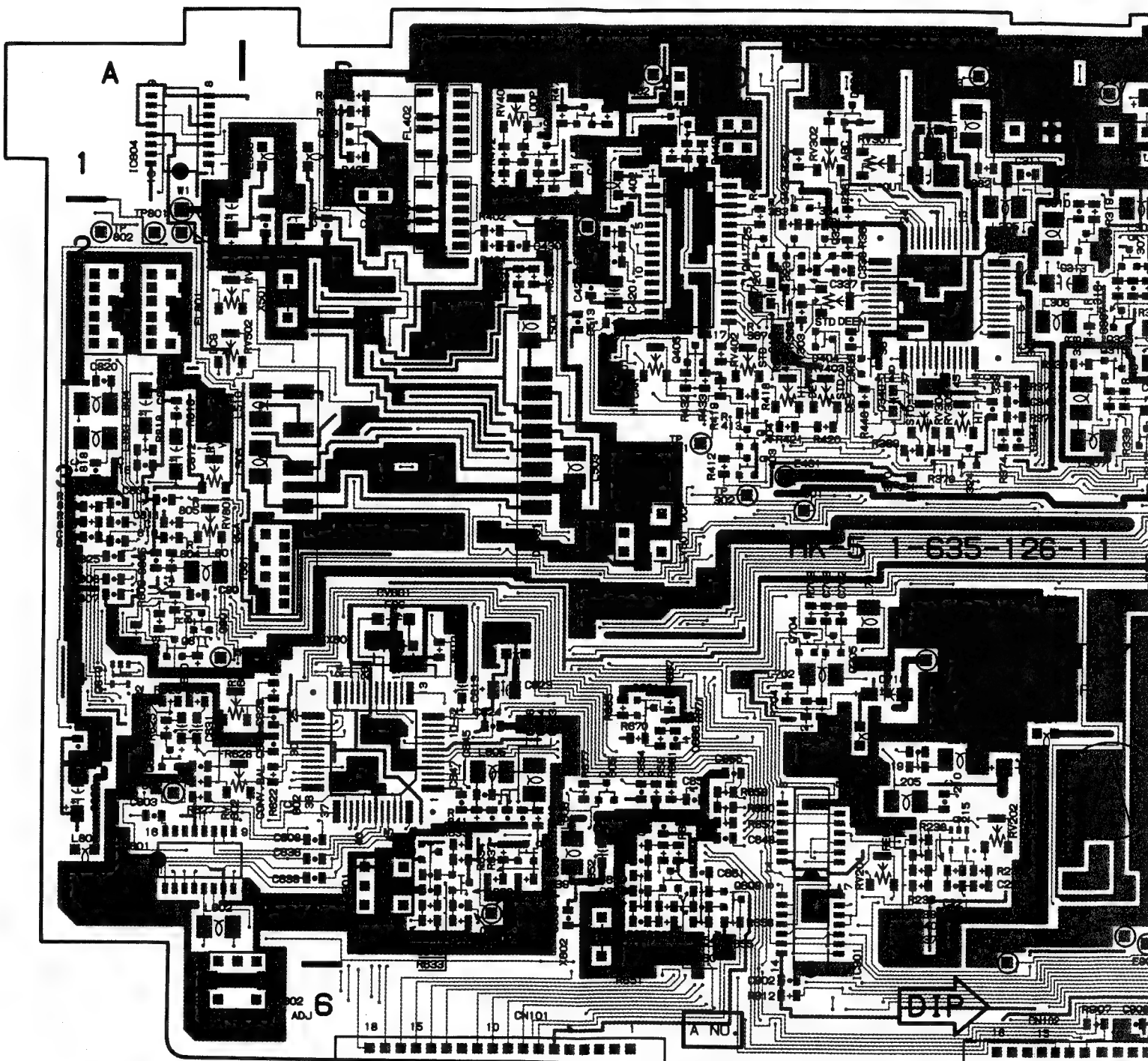
HK-5; Y/C VIDEO PROCESS

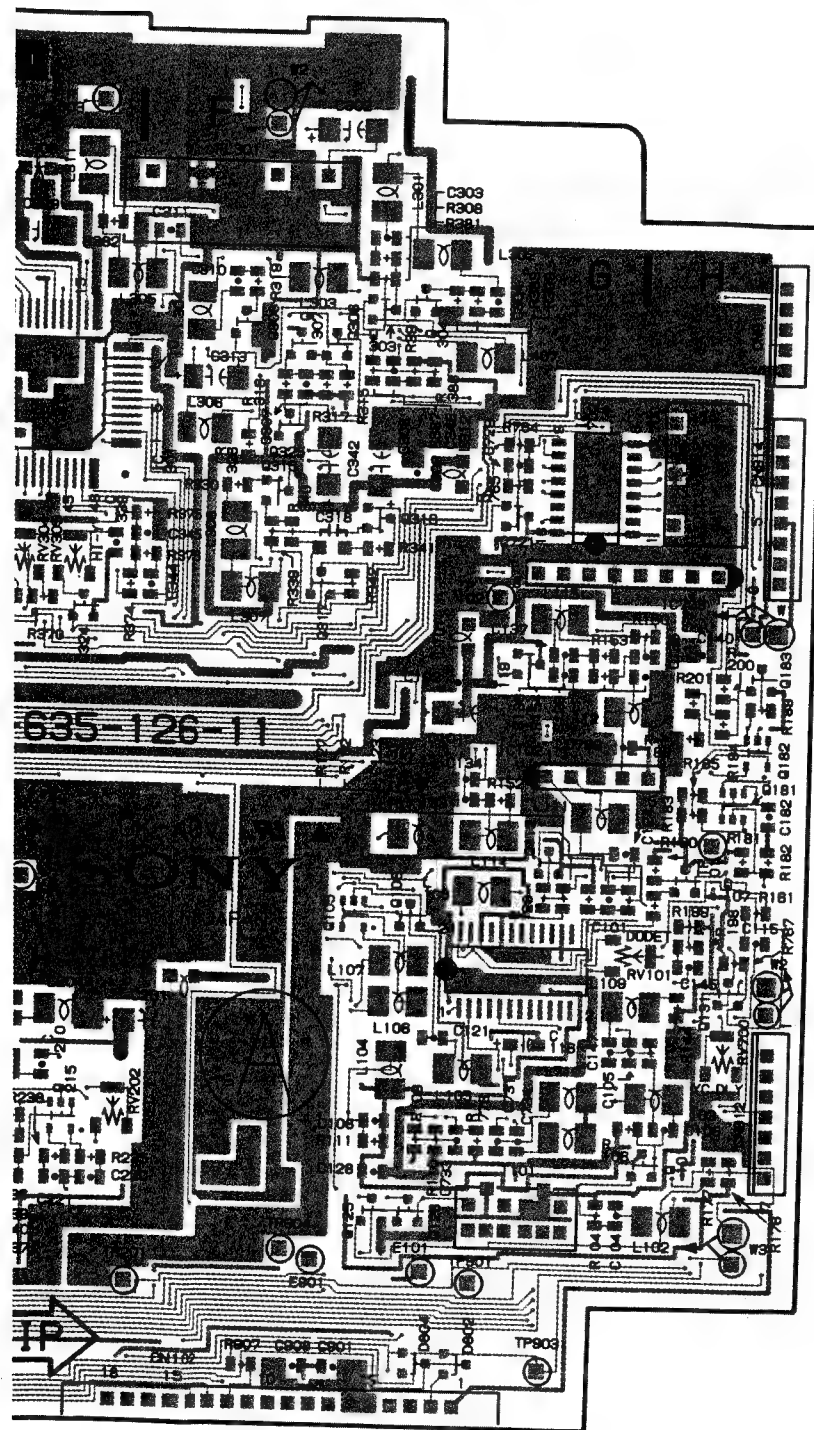
HK-5(1-635-126-11)A SIDE

CF601	A-4	Q307	F-2	TP401	D-3
CF851	G-4	Q315	F-2	TP402	D-1
		Q316	G-2	TP501	C-2
CN101	C-6	Q317	F-3	TP601	A-4
CN102	F-6	Q322	E-2	TP602	A-5
CN911	H-2	Q323	D-2	TP801	A-1
CN912	H-5	Q324	E-3	TP802	A-2
CN914	H-2	Q325	F-2	TP901	G-5
		Q403	D-3	TP903	G-6
CV601	B-4	Q404	D-3	TP904	F-5
		Q405	D-2		
D301	E-1	Q413	D-1	X501	B-2
D404	E-2	Q414	E-2	X601	B-4
D601	D-4	Q417	D-2	X602	C-5
D605	C-5	Q422	C-1		
D802	G-6	Q423	C-1		
D804	G-6	Q426	D-1		
		Q431	B-1		
DL501	C-3	Q603	B-5		
DL700	H-2	Q604	C-5		
		Q605	C-5		
E101	G-5	Q607	D-5		
E201	E-4	Q608	D-5		
E401	D-3	Q610	A-4		
E601	B-5	Q611	A-4		
E901	F-5	Q704	D-4		
		Q721	G-3		
FL301	F-1	Q801	A-4		
FL401	B-2				
FL402	B-1	RV101	H-4		
FL801	A-2	RV201	E-5		
FL802	A-2	RV202	F-5		
		RV301	E-1		
IC101	G-4	RV302	E-1		
IC102	G-3	RV303	D-2		
IC301	F-2	RV304	E-3		
IC401	D-1	RV305	E-3		
IC601	A-5	RV401	D-2		
IC602	B-5	RV402	D-2		
IC604	A-1	RV403	E-2		
IC702	G-2	RV404	D-2		
IC703	H-3	RV405	C-1		
IC901	E-5	RV501	B-2		
IC902	E-5	RV502	B-2		
		RV700	H-5		
LV501	D-3	RV801	A-3		
		RV802	A-3		
Q101	H-5				
Q105	F-4	T101	G-5		
Q107	H-4	T501	B-3		
Q112	G-4	T601	B-5		
Q119	G-3	T602	B-6		
Q125	F-5				
Q126	G-5	TP101	H-4		
Q131	H-4	TP102	G-3		
Q181	H-3	TP201	F-5		
Q182	H-3	TP301	D-3		
Q215	E-5	TP302	D-3		
Q306	F-2	TP303	E-1		

HK-5(1-635-126-11)B SIDE

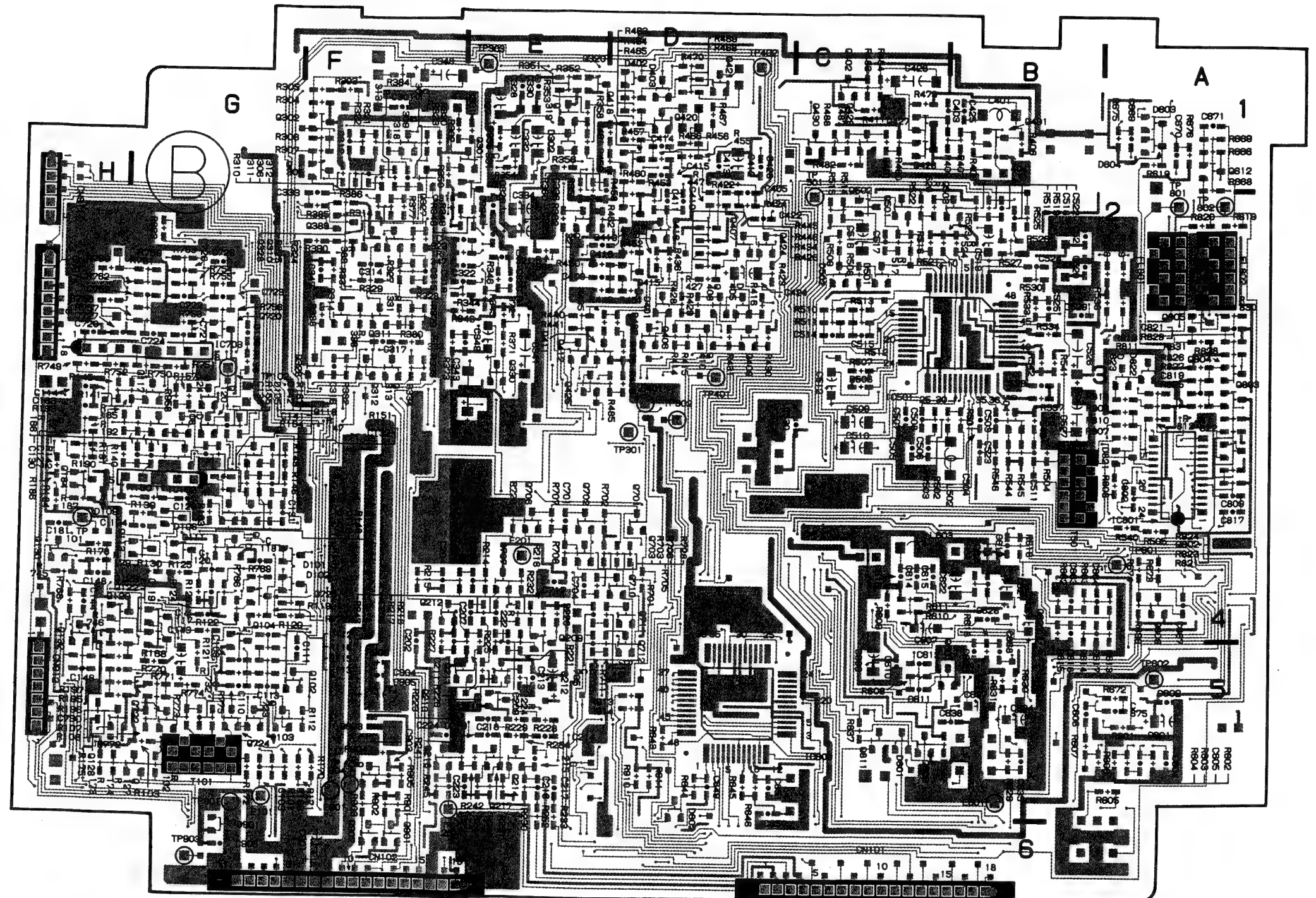
D101	F-4	Q311	F-3	Q811	C-5
D102	F-4	Q312	F-3	Q901	F-6
D105	G-3	Q313	F-3	Q902	F-6
D106	G-4	Q314	F-2	Q903	F-5
D107	F-4	Q318	F-2	Q904	F-5
D108	G-3	Q319	E-1		
D109	H-4	Q320	E-1		
D302	E-1	Q321	E-2		
D401	D-2	Q326	G-3		
D402	D-1	Q327	F-2		
D403	D-1	Q328	G-2		
D405	D-2	Q330	E-3		
D501	C-2	Q389	F-2		
D602	D-5	Q401	B-1		
D603	A-1	Q402	C-1		
D604	A-1	Q406	D-3		
D801	C-5	Q407	D-2		
D821	A-3	Q408	D-2		
D822	A-3	Q409	D-3		
D823	A-3	Q410	D-3		
D901	G-6	Q411	E-3		
		Q412	E-3		
IC501	C-3	Q415	D-2		
IC603	C-5	Q416	D-2		
IC801	A-4	Q418	D-1		
		Q419	D-2		
Q102	F-5	Q420	D-1		
Q103	G-5	Q421	D-1		
Q104	G-4	Q424	D-2		
Q110	G-4	Q425	E-3		
Q111	G-4	Q427	C-1		
Q113	H-4	Q428	C-1		
Q116	F-4	Q429	C-1		
Q117	G-3	Q430	C-1		
Q118	F-3	Q501	C-2		
Q120	G-3	Q502	C-1		
Q121	H-3	Q503	C-2		
Q122	G-4	Q504	B-3		
Q123	G-4	Q601	B-5		
Q124	G-3	Q606	C-5		
Q127	G-5	Q609	A-4		
Q128	H-5	Q612	A-1		
Q129	H-4	Q701	D-3		
Q130	H-4	Q702	E-3		
Q132	H-5	Q703	D-4		
Q184	H-3	Q706	E-3		
Q209	E-4	Q707	E-4		
Q210	F-5	Q710	D-4		
Q211	F-5	Q711	D-4		
Q212	F-4	Q712	D-5		
Q213	E-5	Q720	G-2		
Q214	E-5	Q722	G-5		
Q217	E-5	Q723	G-5		
Q218	F-5	Q724	G-5		
Q301	E-1	Q725	F-4		
Q302	G-1	Q802	A-4		
Q305	G-1	Q803	A-3		
Q309	F-1	Q804	A-3		
Q310	G-2	Q805	A-2		





HK-5 - A SIDE-
1-635-126-11(1)
EVO-9800P

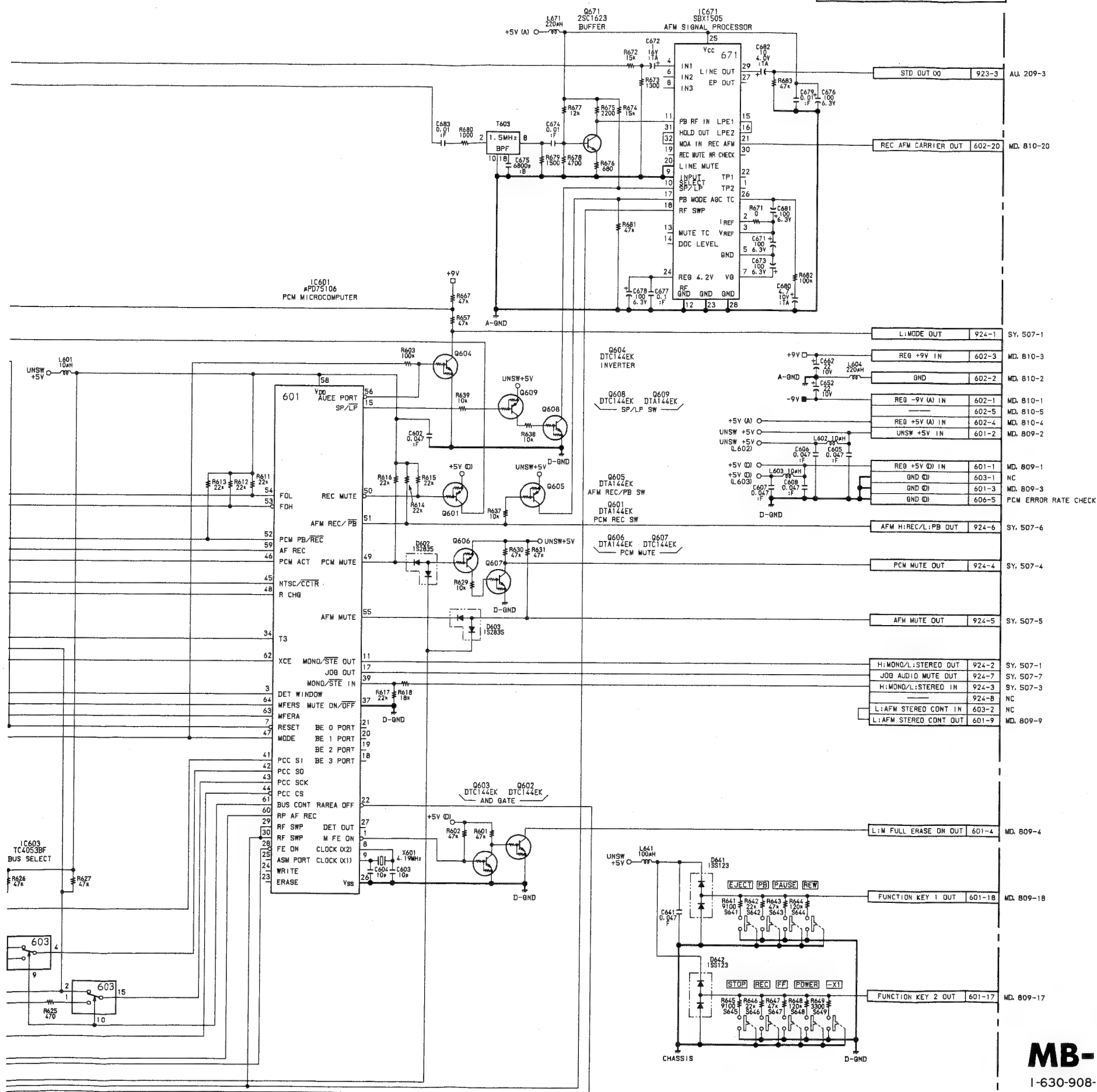
A Side is the same as COMPONENT Side



HK-5 - B SIDE-
1-635-126-11(1)
EVO-9800P

B Side is the same as SOLDER Side





MB-19
I-630-908-13(1)
EVO-9800
EVO-9800P

MB-19; PCM AUDIO

MB-19(1-630-908-13)C

CN601	F-5
CN602	F-3
CN603	E-1
CN605	B-1
CN606	A-1
CN923	F-2
CN924	D-1

IC602	C-3
IC671	E-4

T603	E-5
T651	E-1
T661	E-3

TP601 C-1

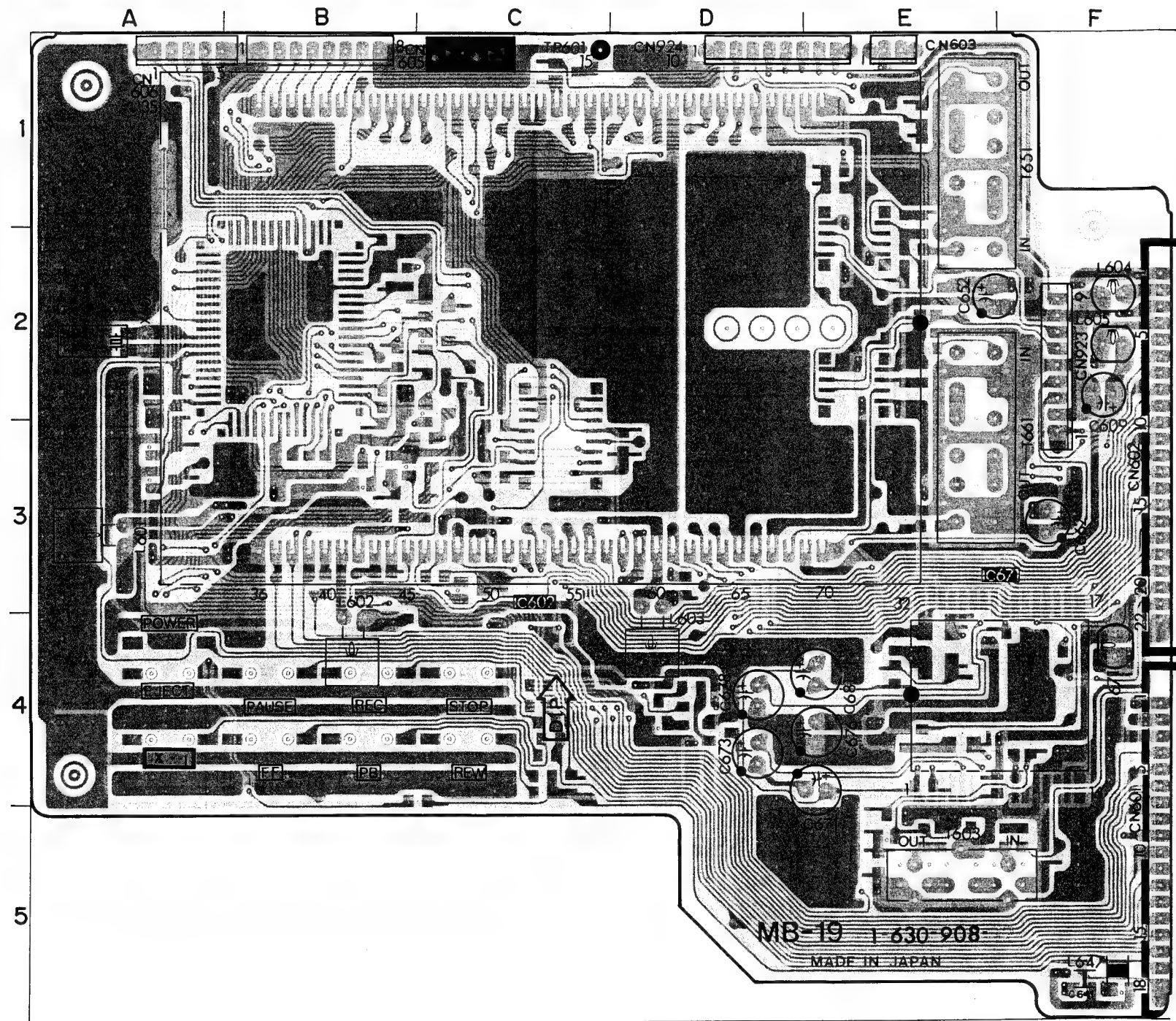
MB-19(1-630-908-13)S

D601	C-3
D602	C-2
D603	C-2
D604	C-1
D641	F-5
D642	F-5

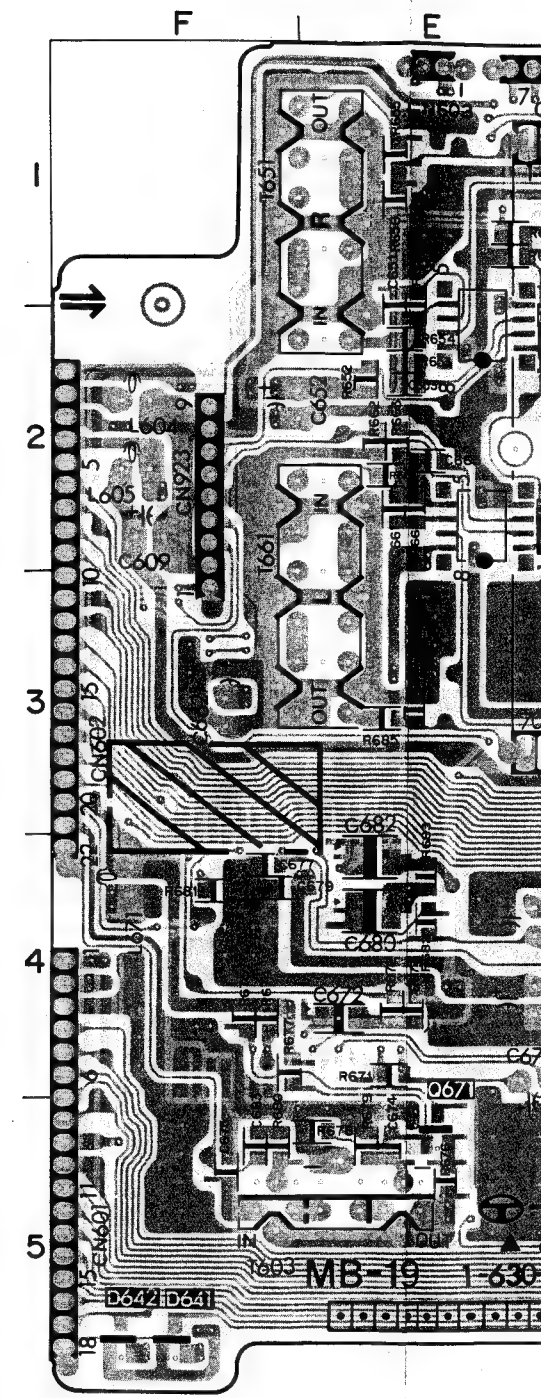
IC601	B-2
IC603	C-2
IC651	E-2
IC661	E-2

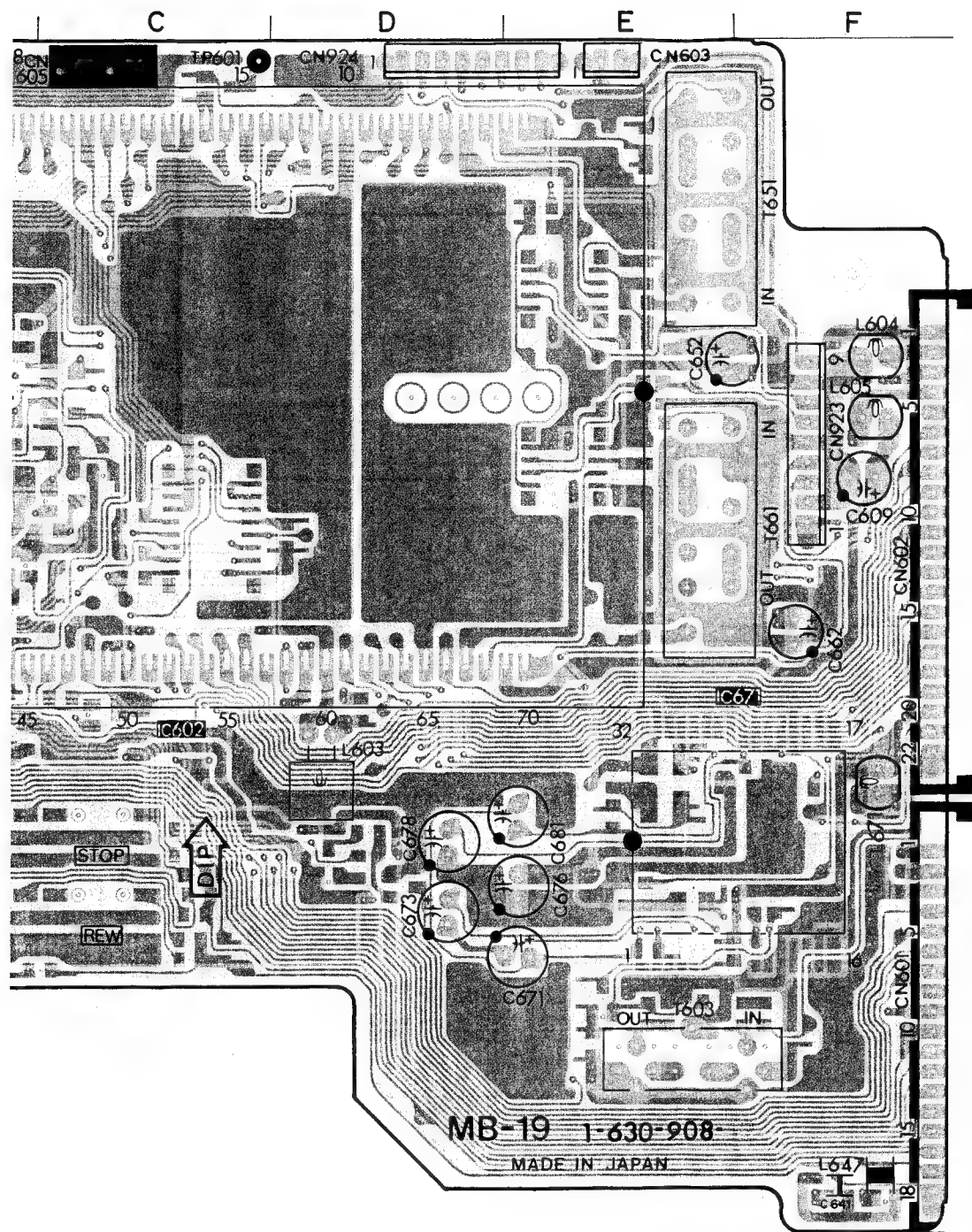
Q601	B-3
Q602	A-3
Q603	A-3
Q604	C-2
Q605	C-2
Q606	C-3
Q607	B-3
Q608	D-4
Q609	D-4
Q671	E-5

S641	A-4
S642	B-4
S643	B-4
S644	C-4
S645	C-4
S646	B-4
S647	B-4
S648	A-4
S649	A-4

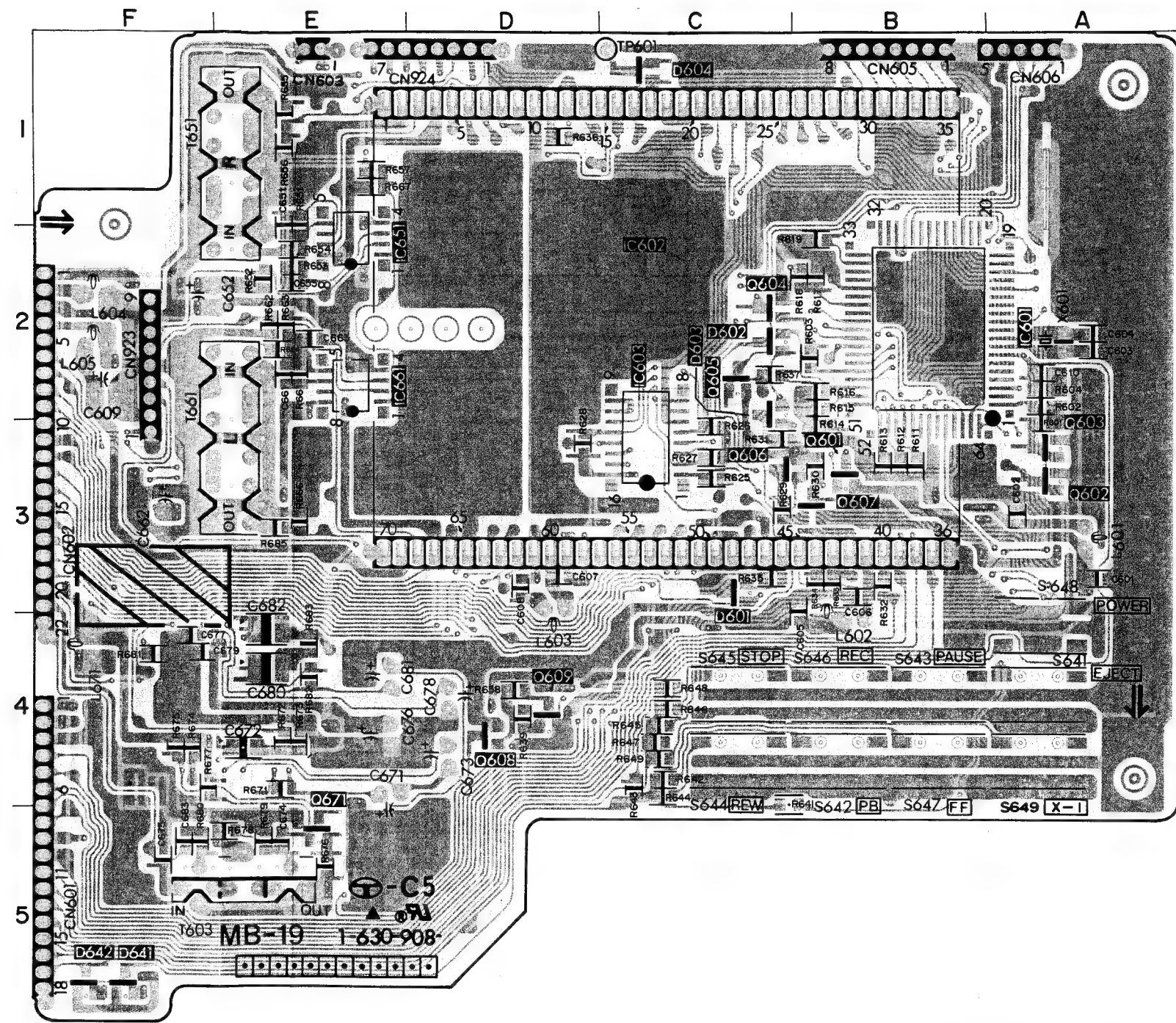


MB-19 —COMPONENT SIDE—
I-630-908-13(1)
EVO-9800
EVO-9800P

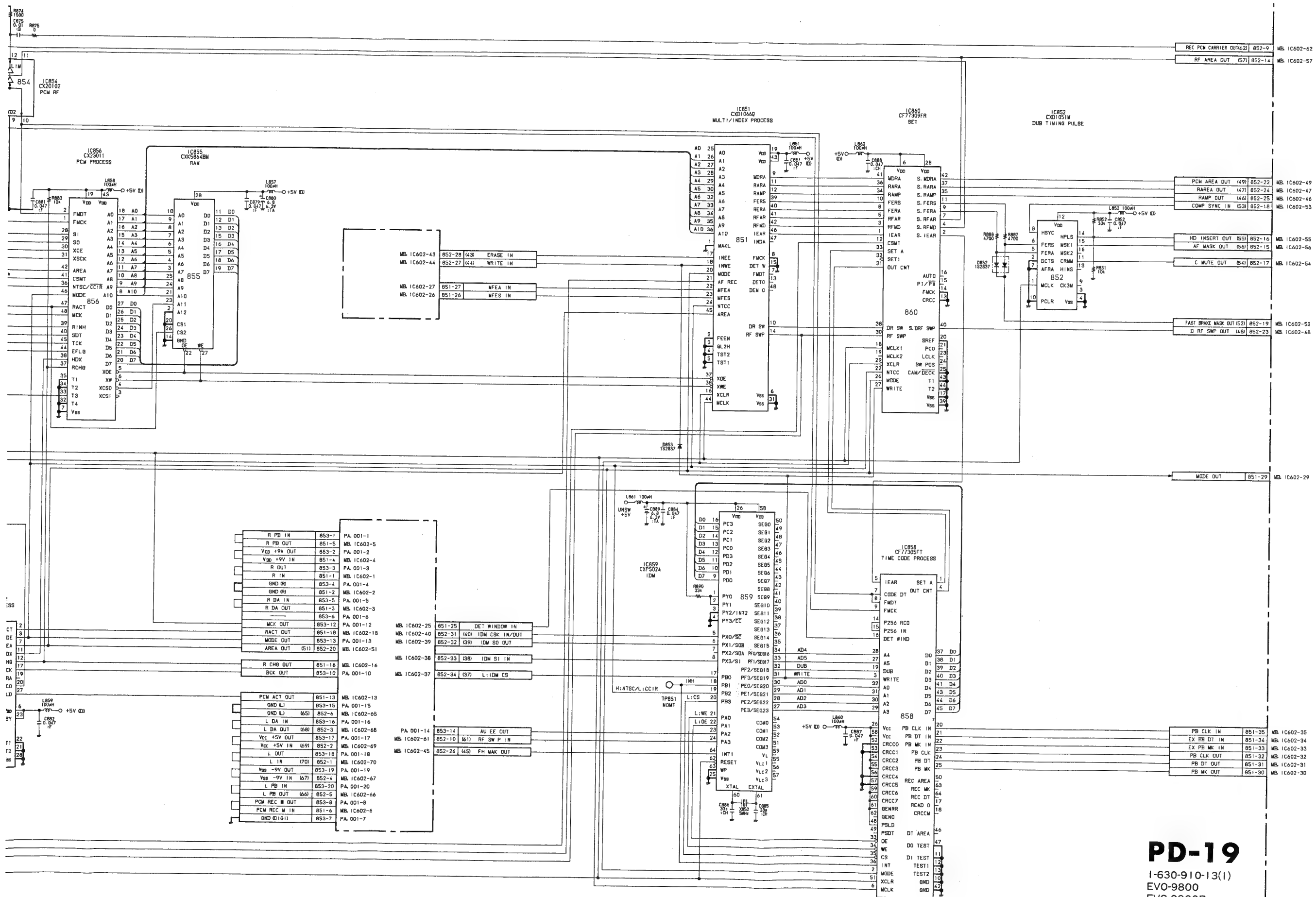




MB-19 —COMPONENT SIDE—
1-630-908-13(1)
EVO-9800
EVO-9800P

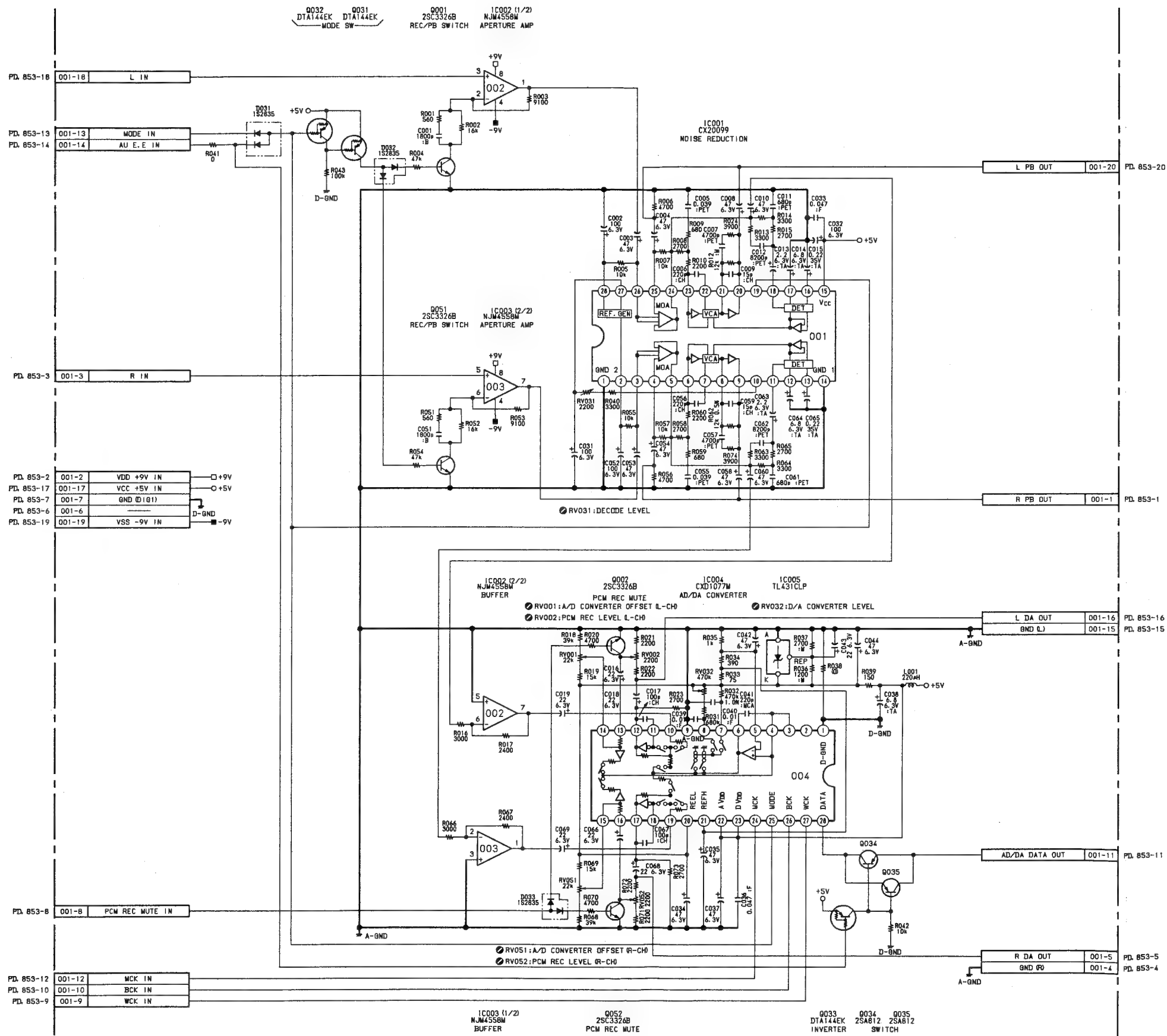


MB-19 —SOLDERING SIDE—
1-630-908-13(1)
EVO-9800
EVO-9800P



PD-19

I-630-910-13(1)
EVO-9800
EVO-9800P



PD-19(1)

CN851
CN852
CN853

D851
D852
D853

IC851
IC852
IC856
IC857
IC858

Q851

RV851
RV854

X851
X852

PA-27(1)

CN001

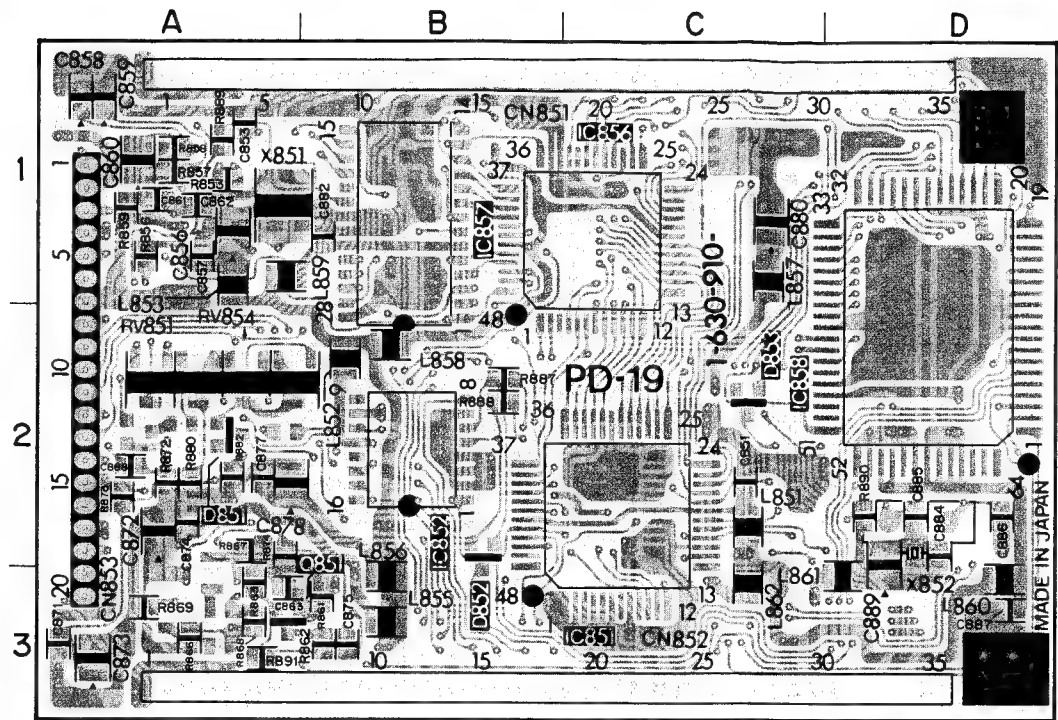
D033

IC001
IC002
IC003
IC004
IC005

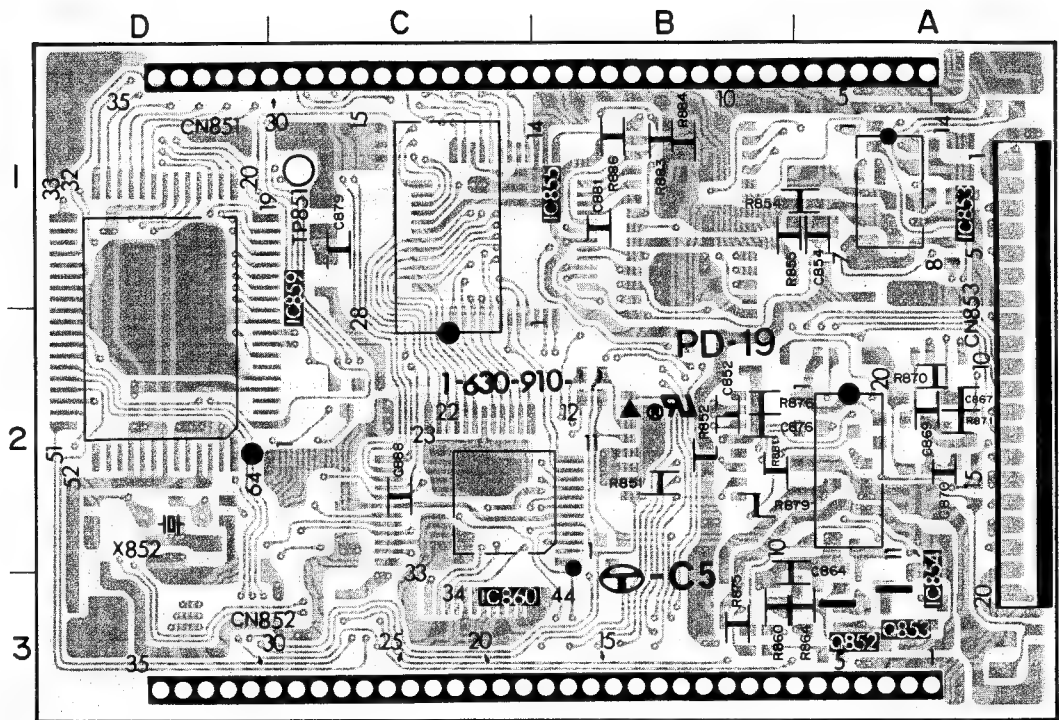
RV001
RV002
RV031
RV032
RV051
RV052

PD-19; PCM AUDIO DIGITAL
PA-27; PCM AUDIO ANALOG

PD-19(1-630-910-13)C		PD-19(1-630-910-13)S	
CN851	B-1	IC853	A-1
CN852	C-3	IC854	A-2
CN853	A-2	IC855	C-1
		IC859	D-1
		IC860	C-2
D851	A-2		
D852	B-2	Q852	A-3
D853	C-2	Q853	A-3
IC851	C-2		
IC852	B-2	TP851	C-1
IC856	C-1		
IC857	B-1		
IC858	D-2		
Q851	A-3		
RV851	A-2		
RV854	A-2		
X851	A-1		
X852	D-2		

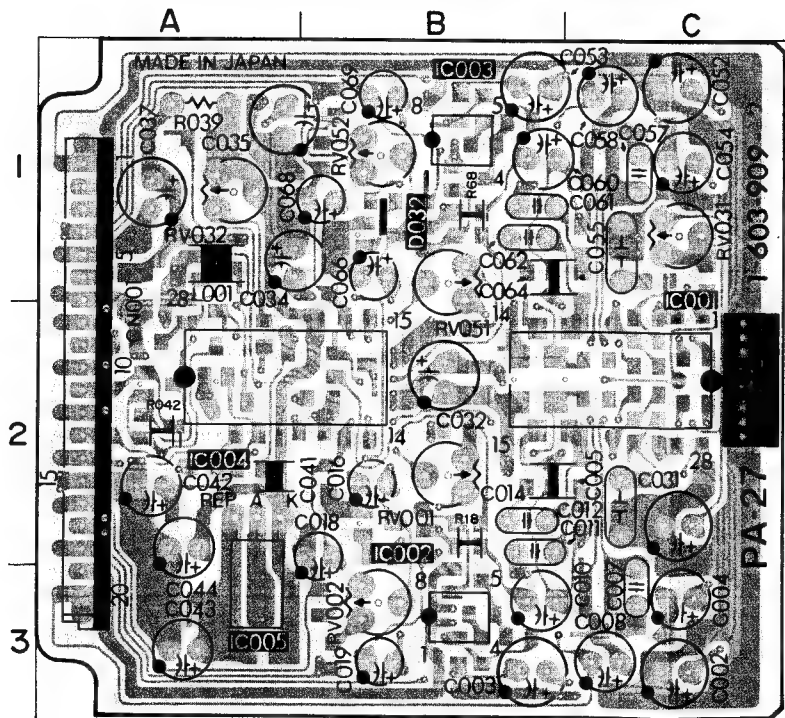


PD-19 —COMPONENT SIDE—
1-630-910-13(1)
EVO-9800

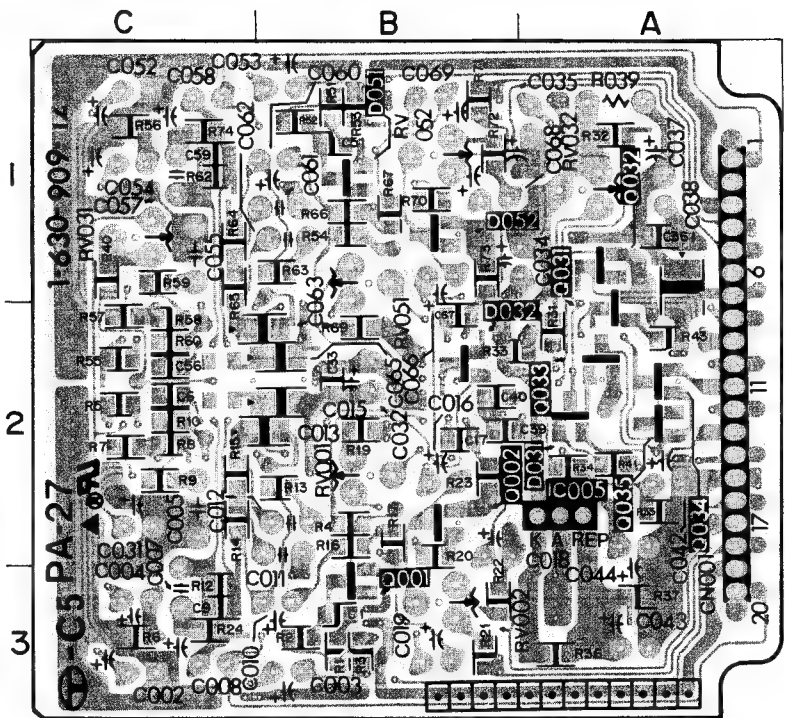


PD-19 —SOLDERING SIDE—
1-630-910-13(1)
EVO-9800

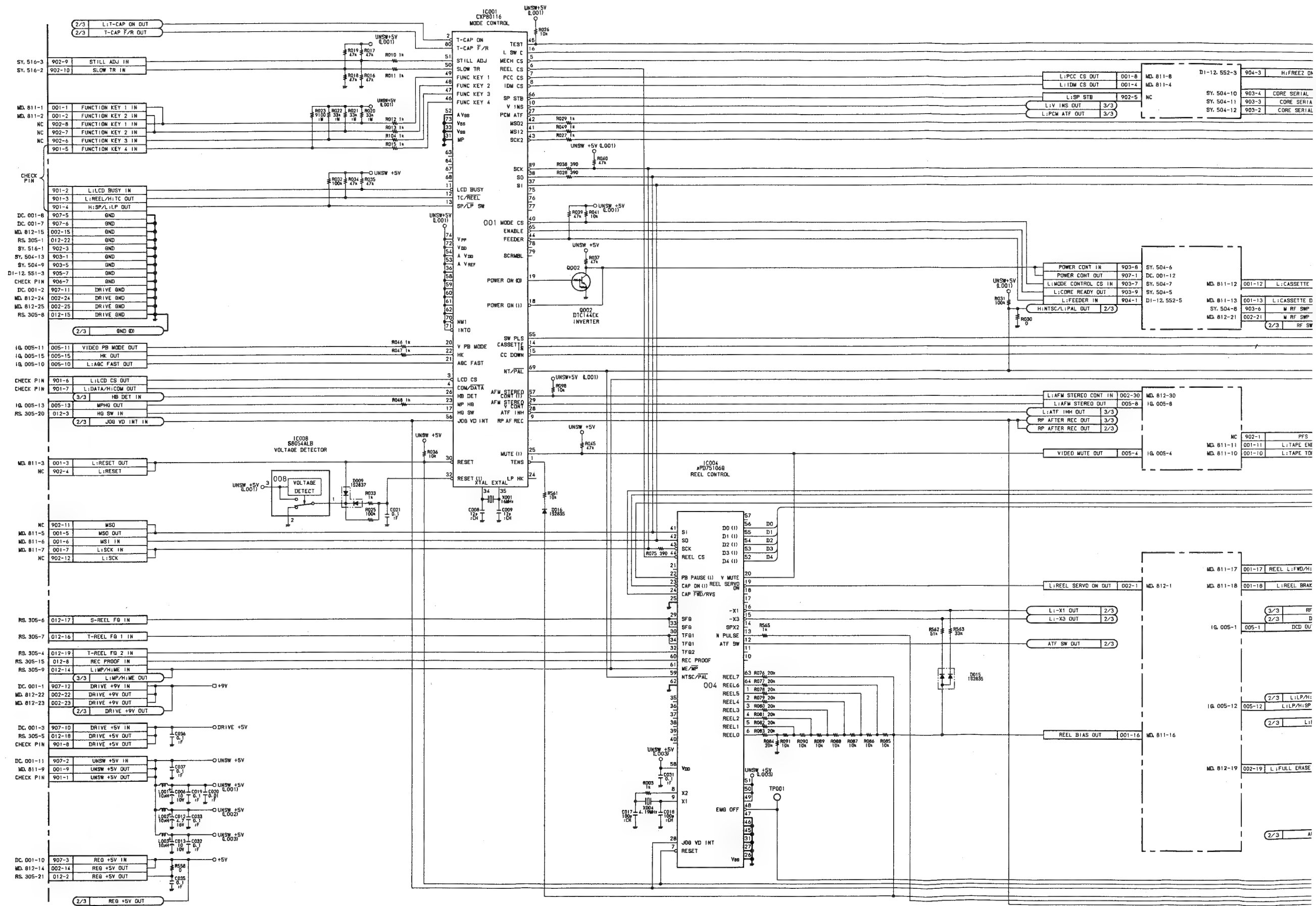
PA-27(1-630-909-13)C		PA-27(1-630-909-13)S	
CN001	A-2	D031	A-2
		D032	B-2
D033	B-1		
		Q001	B-3
		Q002	B-2
IC001	C-2	Q031	A-1
IC002	B-3	Q032	A-1
IC003	B-1	Q033	A-2
IC004	A-2	Q034	A-2
IC005	A-2	Q035	A-2
		Q051	B-1
		Q052	B-1
RV001	B-2		
RV002	B-3		
RV031	C-1		
RV032	A-1		
RV051	B-1		
RV052	B-1		

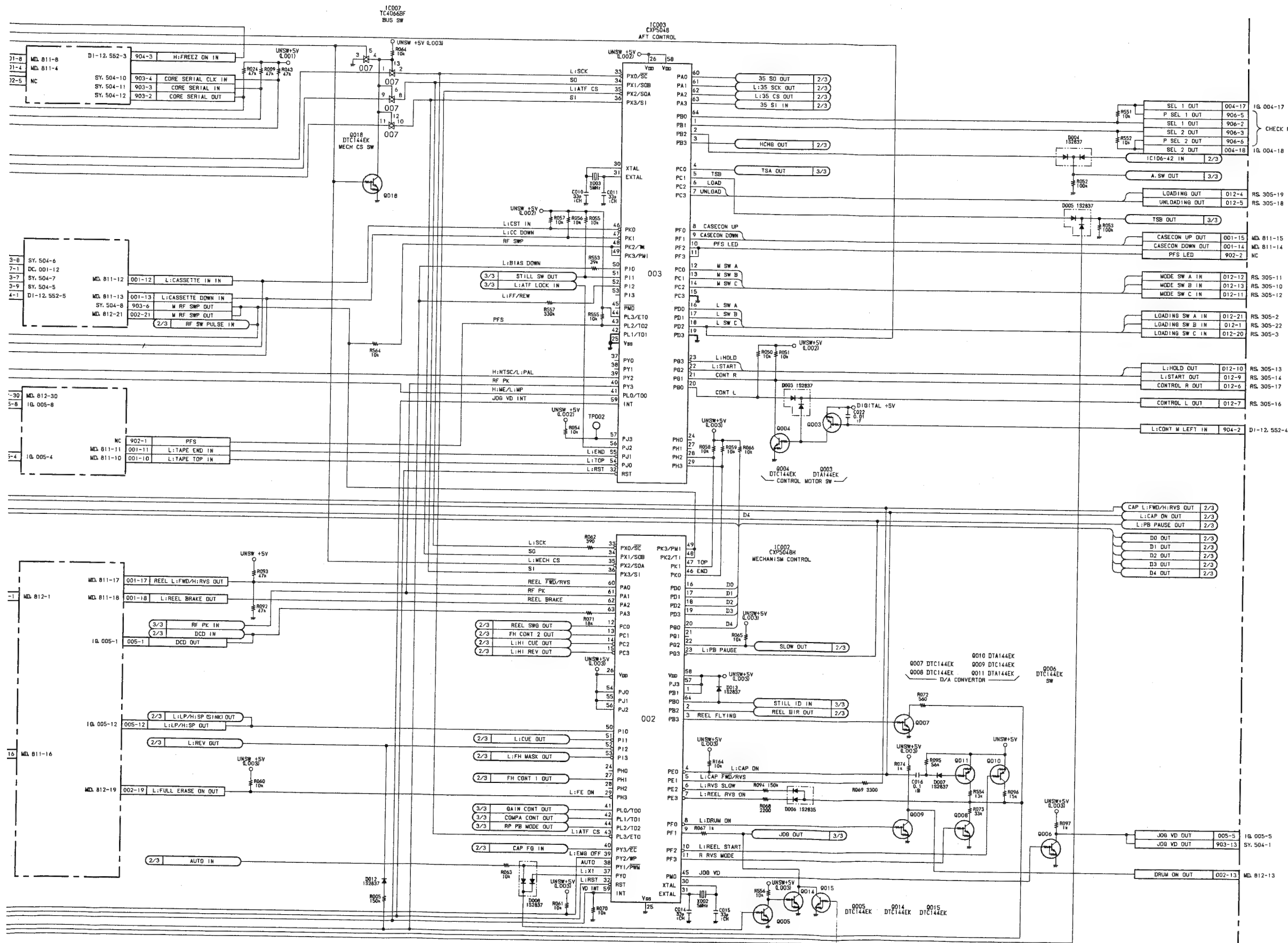


PA-27 —COMPONENT SIDE—
1-630-909-13(1)
EVO-9800



PA-27 —SOLDERING SIDE—
1-630-909-13(1)
EVO-9800



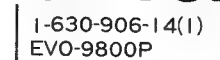


SE-10P(1/3)

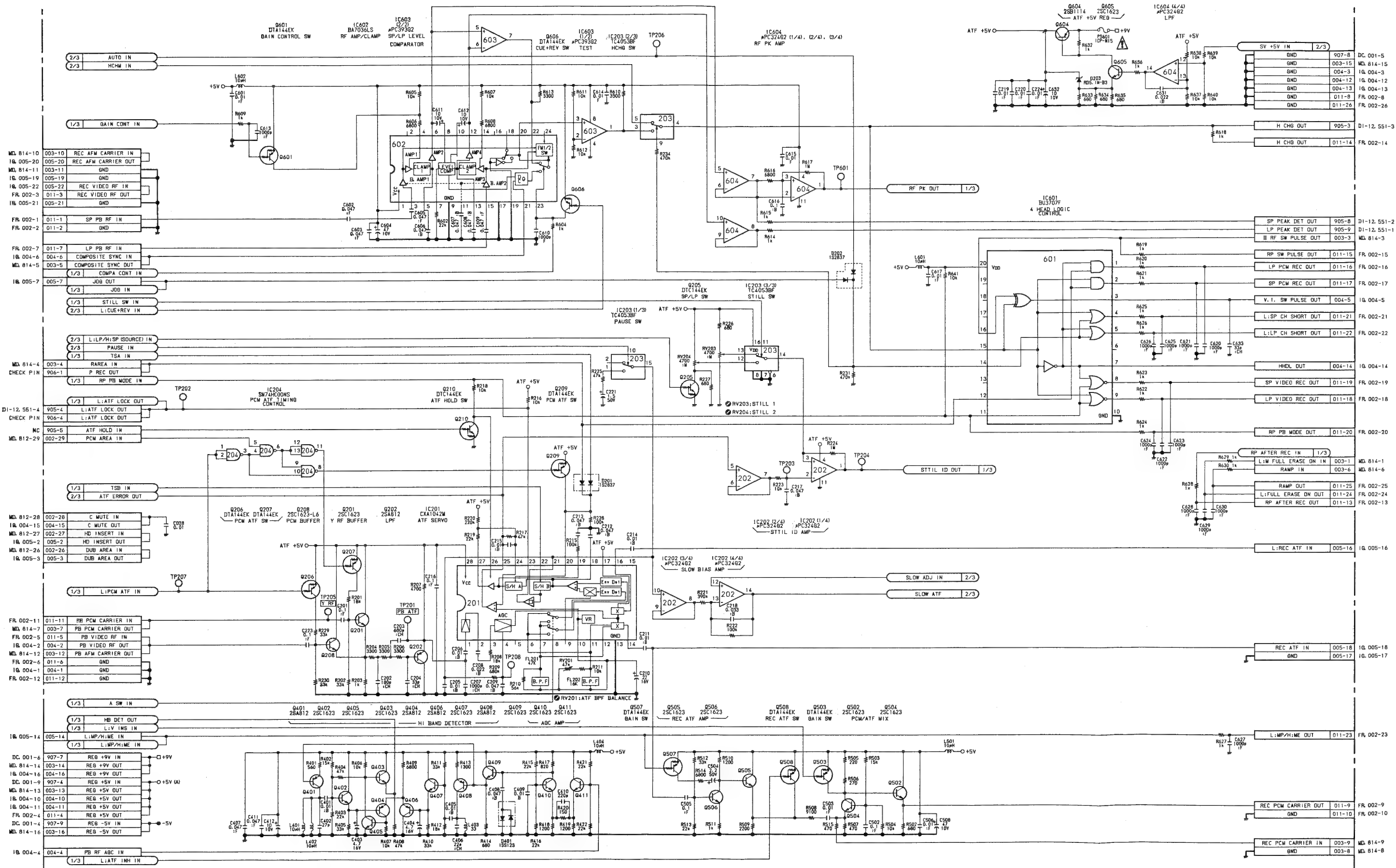
I-630-906-14(1)
EVO-9800P

SE-10P (2/3)



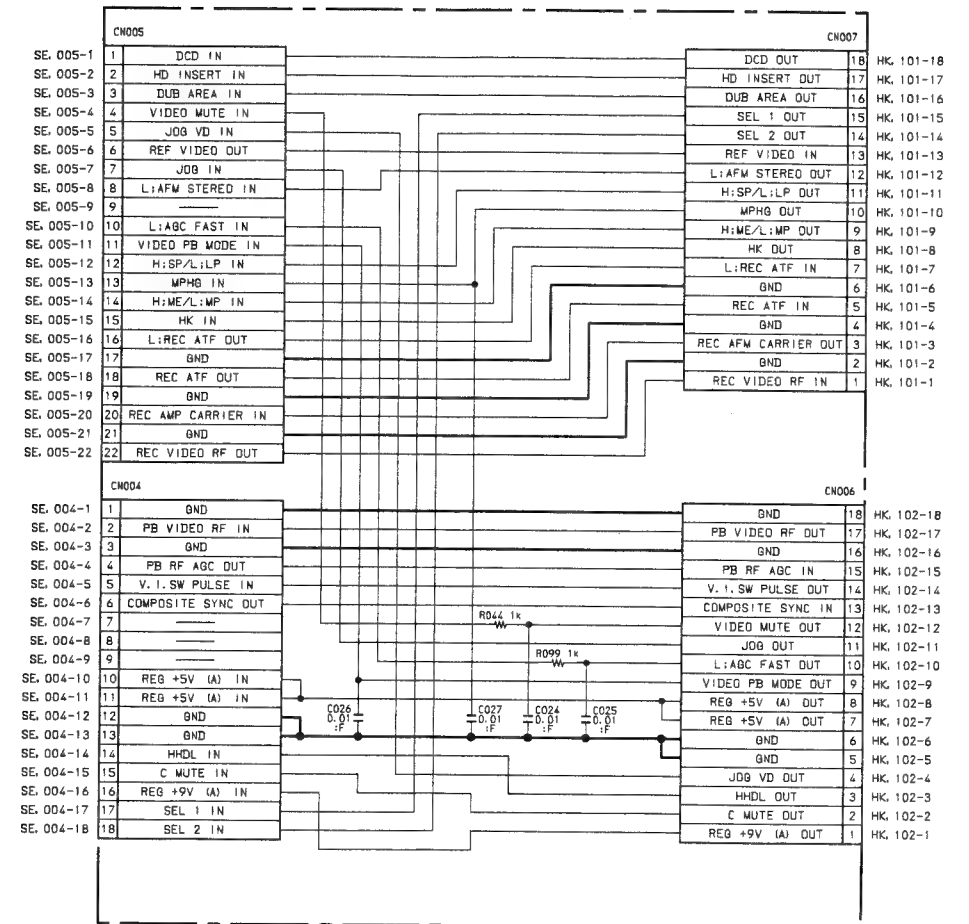


SE-10P (3/3); ATF SERVO
IG-4; TERMINAL



NOTE:
The A-mar
Replace on

SE-10P
1-630-906-14
EVO-9800P



I-630-904-14(1)
EVO-9800
EVO-9800P

SE-1 OP(3/3)

1-630-906-14(1)
EVO-9800P

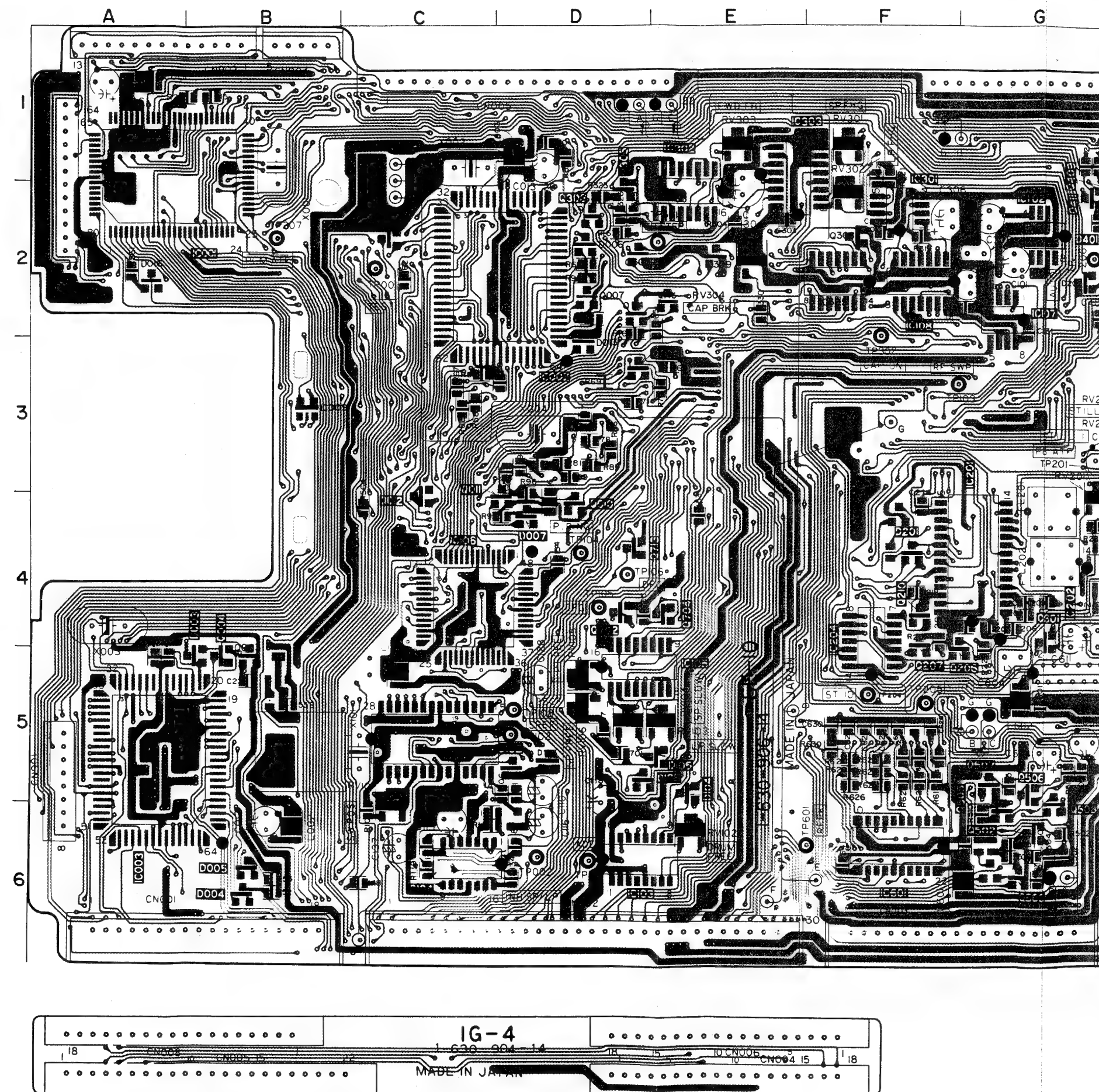
SE-10P; SERVO, SYSTEM CONTROL
IG-4; TERMINAL

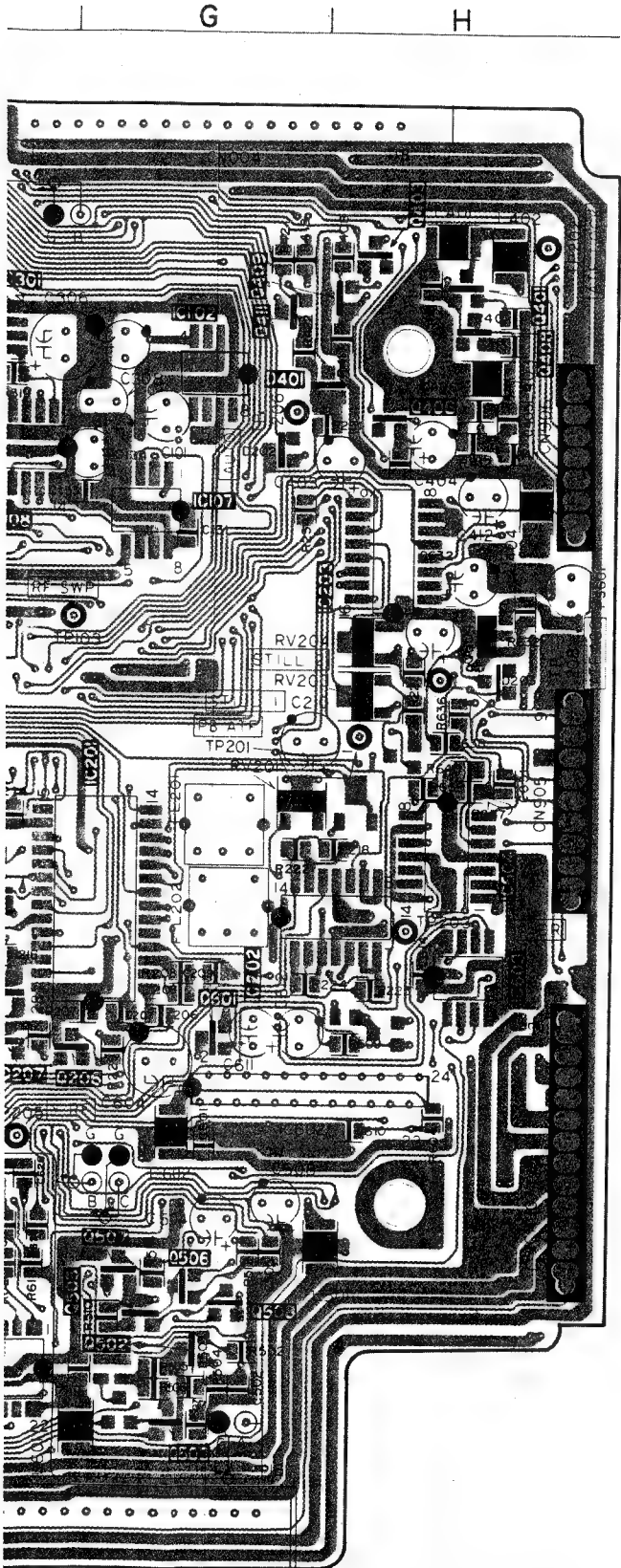
SE-10P(1-630-906-14)C

CN001	A-6	Q003	B-5	TP108	D-5
CN002	D-6	Q004	B-5	TP201	H-3
CN003	G-6	Q007	D-2	TP202	H-1
CN004	G-1	Q009	D-3	TP203	H-4
CN005	D-1	Q010	D-4	TP204	F-5
CN901	A-5	Q011	C-4	TP205	F-5
CN902	A-1	Q018	C-2	TP206	G-2
CN903	A-1	Q114	D-2	TP207	B-2
CN904	B-1	Q203	H-3	TP208	H-3
CN905	H-4	Q204	H-3	TP301	E-2
CN906	H-2	Q206	F-5	TP302	F-3
CN907	H-5	Q207	F-5	TP601	F-6
		Q210	F-4		
D003	B-5	Q303	D-2	X001	B-2
D004	B-6	Q305	D-2	X002	C-1
D005	B-6	Q306	D-2	X003	A-4
D006	D-2	Q309	E-2	X004	D-3
D007	D-4	Q401	H-2	X101	C-5
D012	C-4	Q403	H-1		
D013	D-3	Q406	H-2		
D016	A-2	Q408	H-2		
D101	D-6	Q409	G-2		
D102	D-5	Q411	G-2		
D104	E-5	Q502	G-6		
D105	E-5	Q503	G-6		
D106	E-5	Q505	G-6		
D201	F-4	Q506	G-5		
D202	G-2	Q507	G-5		
D401	G-2	Q508	G-6		
		Q601	G-4		
FL201	G-4	Q604	H-3		
FL202	G-4	Q702	D-4		
		Q704	E-4		
		Q713	D-4		
IC001	B-2				
IC002	D-2				
IC003	A-5	RV101	C-6		
IC009	B-3	RV102	E-6		
IC101	C-5	RV103	E-5		
IC102	G-2	RV104	D-5		
IC103	D-6	RV105	D-5		
IC104	C-6	RV106	D-5		
IC105	D-5	RV201	G-4		
IC106	C-4	RV202	H-4		
IC107	G-2	RV203	H-3		
IC108	F-2	RV204	H-3		
IC201	G-4	RV301	F-1		
IC202	G-4	RV302	F-2		
IC203	H-3	RV303	E-1		
IC204	F-5	RV304	E-2		
IC301	F-2				
IC302	E-2	TP001	C-2		
IC303	E-1	TP002	D-6		
IC305	F-2	TP101	D-6		
IC601	F-6	TP102	D-5		
IC602	G-5	TP103	F-3		
IC603	H-4	TP104	D-4		
IC604	H-4	TP105	D-4		
		TP106	D-4		
PS601	H-3	TP107	C-5		

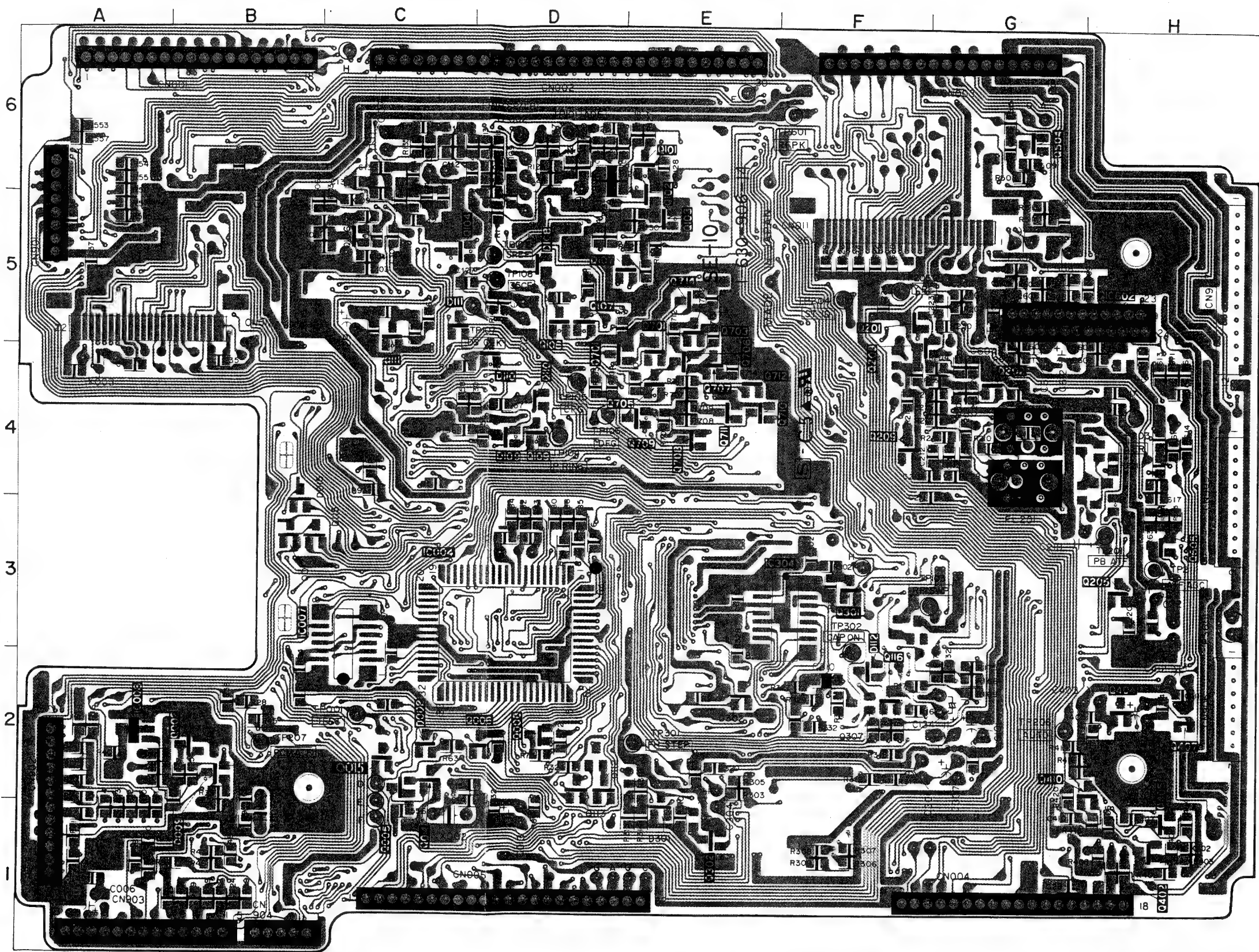
SE-10P(1-630-906-14)S

CN011	F-5	Q605	H-3
CN012	B-5	Q701	D-4
D008	C-2	Q703	E-5
D009	B-2	Q705	E-4
D010	B-2	Q706	E-4
D015	B-4	Q707	E-4
D107	D-5	Q708	E-4
D108	D-5	Q709	E-4
D109	D-4	Q710	E-4
D110	D-4	Q711	E-4
D111	C-5	Q712	E-4
D112	F-2	Q714	E-5
D115	C-5		
D301	E-1		
D302	E-2		
D701	E-5		
IC004	D-3		
IC007	C-3		
IC008	A-2		
IC304	F-3		
		Q002	B-2
		Q005	C-2
		Q006	D-2
		Q008	D-2
		Q014	C-2
		Q015	C-2
		Q017	B-5
		Q101	E-6
		Q102	E-6
		Q103	E-5
		Q104	C-5
		Q106	C-5
		Q107	D-5
		Q108	D-5
		Q109	D-4
		Q110	D-4
		Q111	C-5
		Q112	D-2
		Q113	D-2
		Q116	F-2
		Q201	F-5
		Q202	G-4
		Q203	H-3
		Q205	H-3
		Q208	F-5
		Q209	F-4
		Q211	H-4
		Q301	F-3
		Q302	E-1
		Q304	D-2
		Q307	F-2
		Q402	H-1
		Q404	H-2
		Q405	H-1
		Q407	H-2
		Q410	H-2
		Q504	G-6





SE-10P —COMPONENT SIDE—
I-630-906-14(I)
EVO-9800P



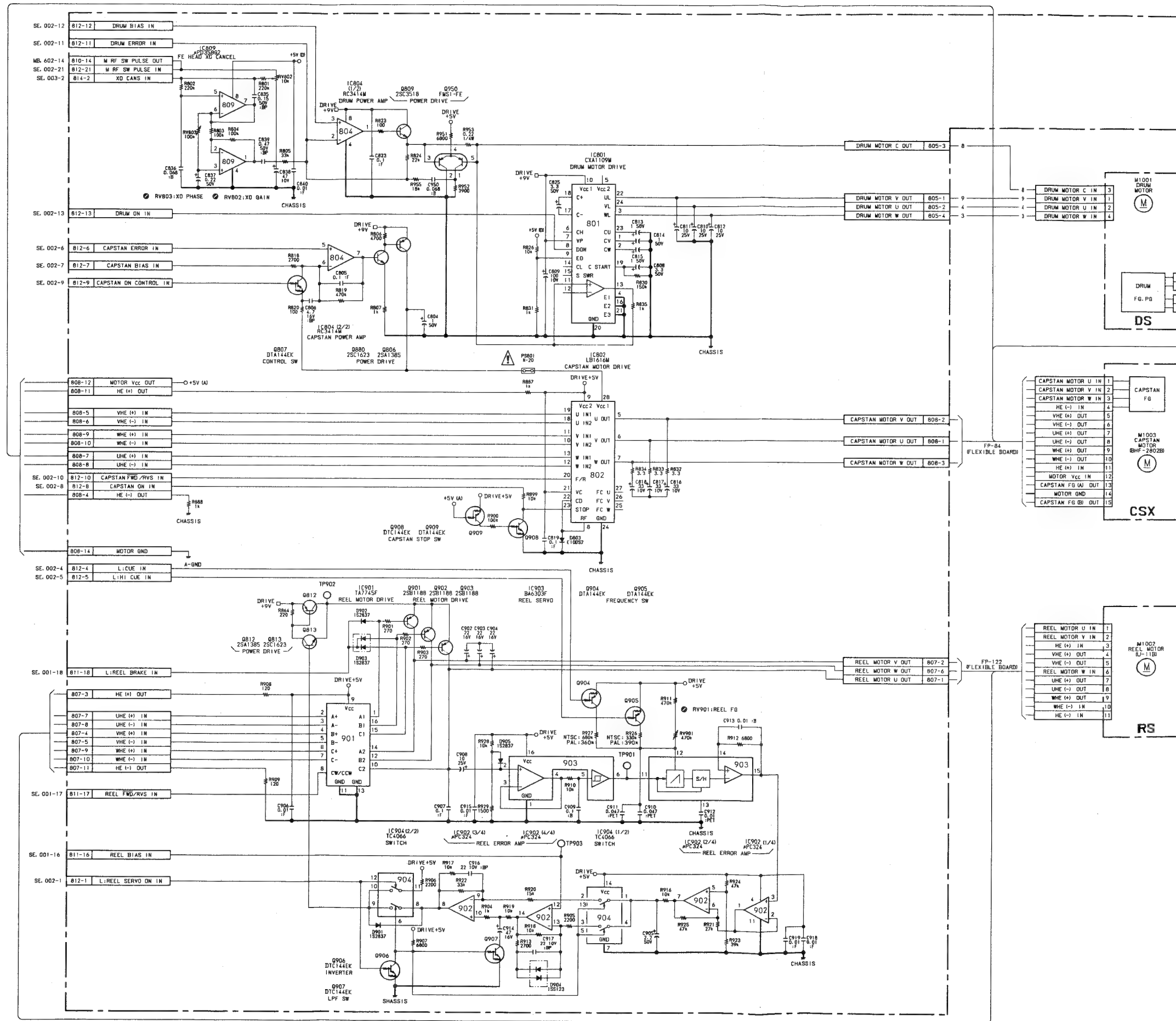
SE-10P —SOLDERING SIDE—
I-630-906-14(I)
EVO-9800P

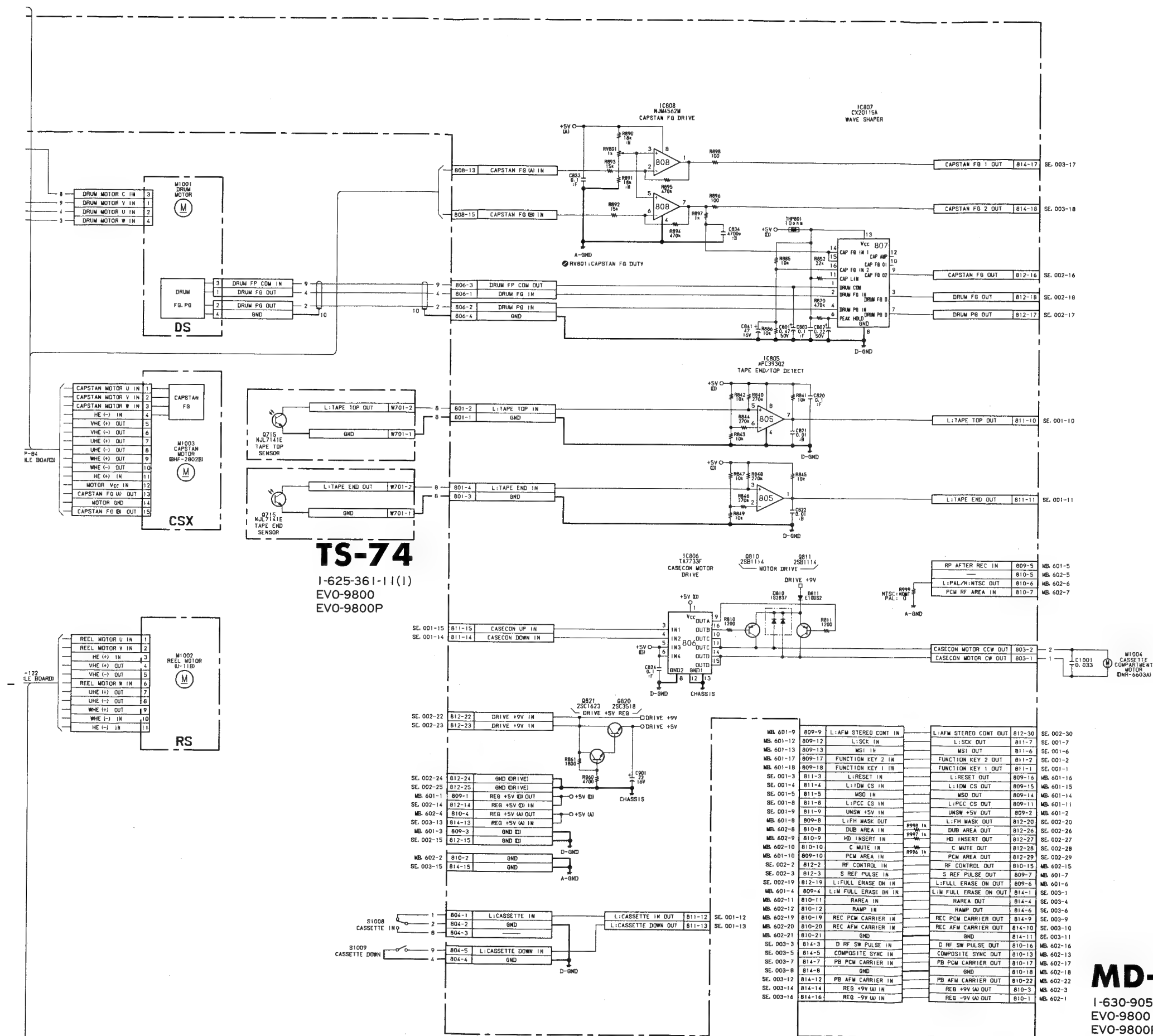


IG-4 —SOLDERING SIDE—
I-630-904-14 (I)
EVO-9800P

MD-23P; DRUM/CAPSTAN/REEL MOTOR DRIVE
TS-74; TAPE TOP/END SENSOR

NOTE:
The Δ -marked components are critical to safety.
Replace only with same components as specified.





MD-23/P

I-630-905-14(1)
EVO-9800
EVO-9800P

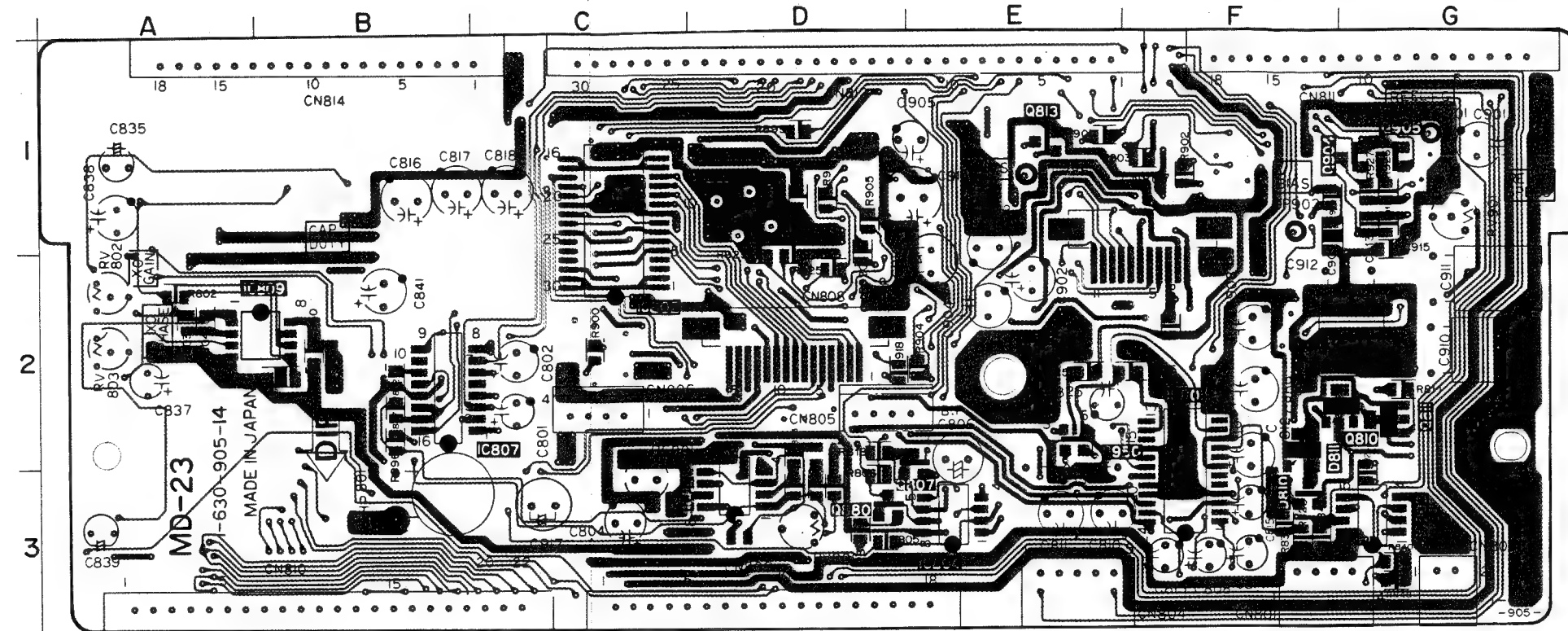
**MD-23P; DRUM/CAASTAN/REEL MOTOR DRIVE
TS-74; TAPE POP/END SENSOR**

MD-23P(1-630-905-14)C

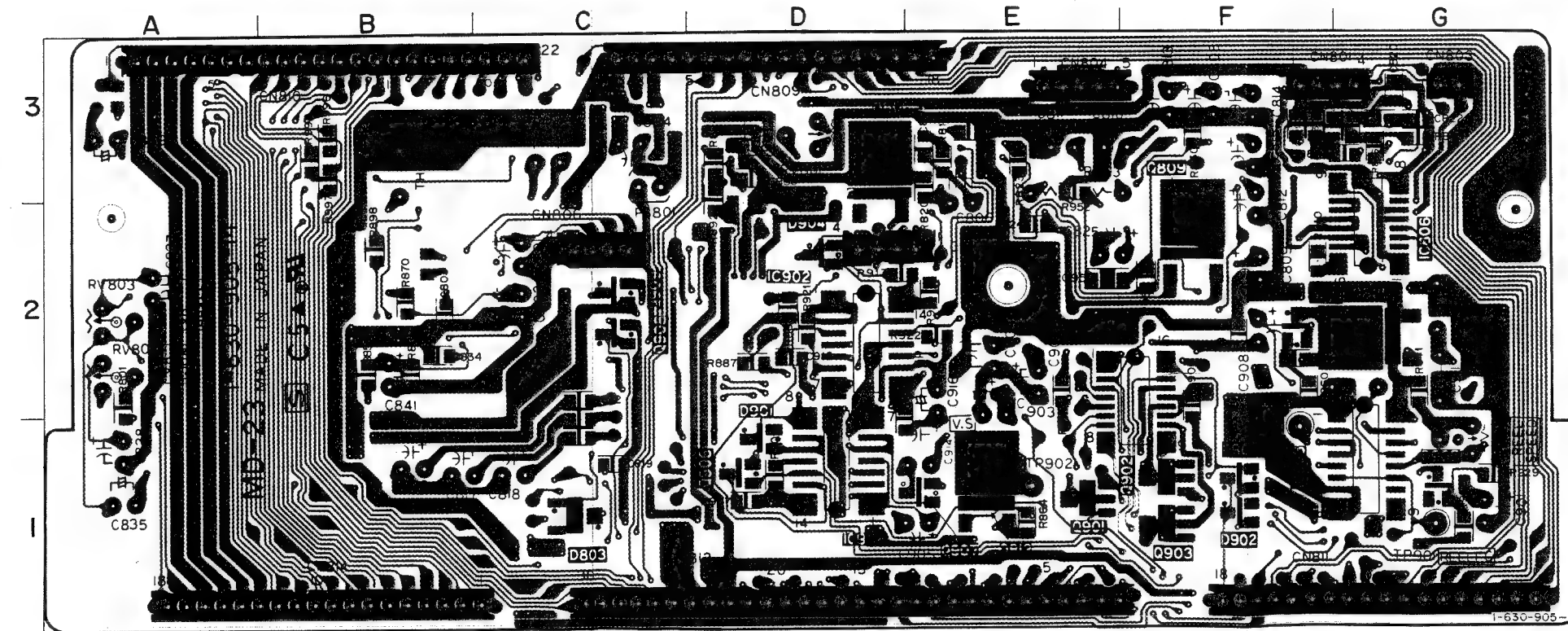
CN801	F-3	PS801	C-3
CN803	G-3		
CN804	E-3	Q807	E-3
CN805	D-2	Q810	G-2
CN806	C-2	Q811	G-2
CN807	F-1	Q813	E-1
CN808	D-2	Q880	D-3
CN809	D-3	Q904	G-1
CN810	B-2	Q905	G-1
CN811	F-1	Q950	E-2
CN812	D-1		
CN814	B-1	RV801	D-3
		RV802	A-2
D810	F-3	RV803	A-2
D811	F-3	RV901	G-1
IC801	F-2	THP801	B-3
IC802	C-1		
IC804	E-3	TP901	G-1
IC805	G-3	TP902	E-1
IC807	B-2	TP903	F-1
IC808	D-3		
IC809	A-2		

MD-23P(1-630-905-14)S

D803	C-1
D901	D-1
D902	F-1
D903	F-1
D904	D-2
D905	G-1
IC806	G-2
IC901	F-2
IC902	D-2
IC903	G-1
IC904	D-1
Q806	D-3
Q809	F-2
Q812	E-1
Q820	G-2
Q821	F-2
Q901	E-1
Q902	F-1
Q903	F-1
Q906	D-1
Q907	E-1
Q908	C-2
Q909	C-2

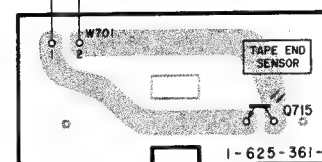


MD-23P —COMPONENT SIDE—
1-630-905-14(1)
EVO-9800P



MD-23P —SOLDERING SIDE—
1-630-905-14(1)
EVO-9800P

TO
MD-23 BOARD
CN801



TS-74 —SOLDERING SIDE—
1-625-361-1
EVO-9800
EVO-9800P

TO
MD-23 BOARD
CN801

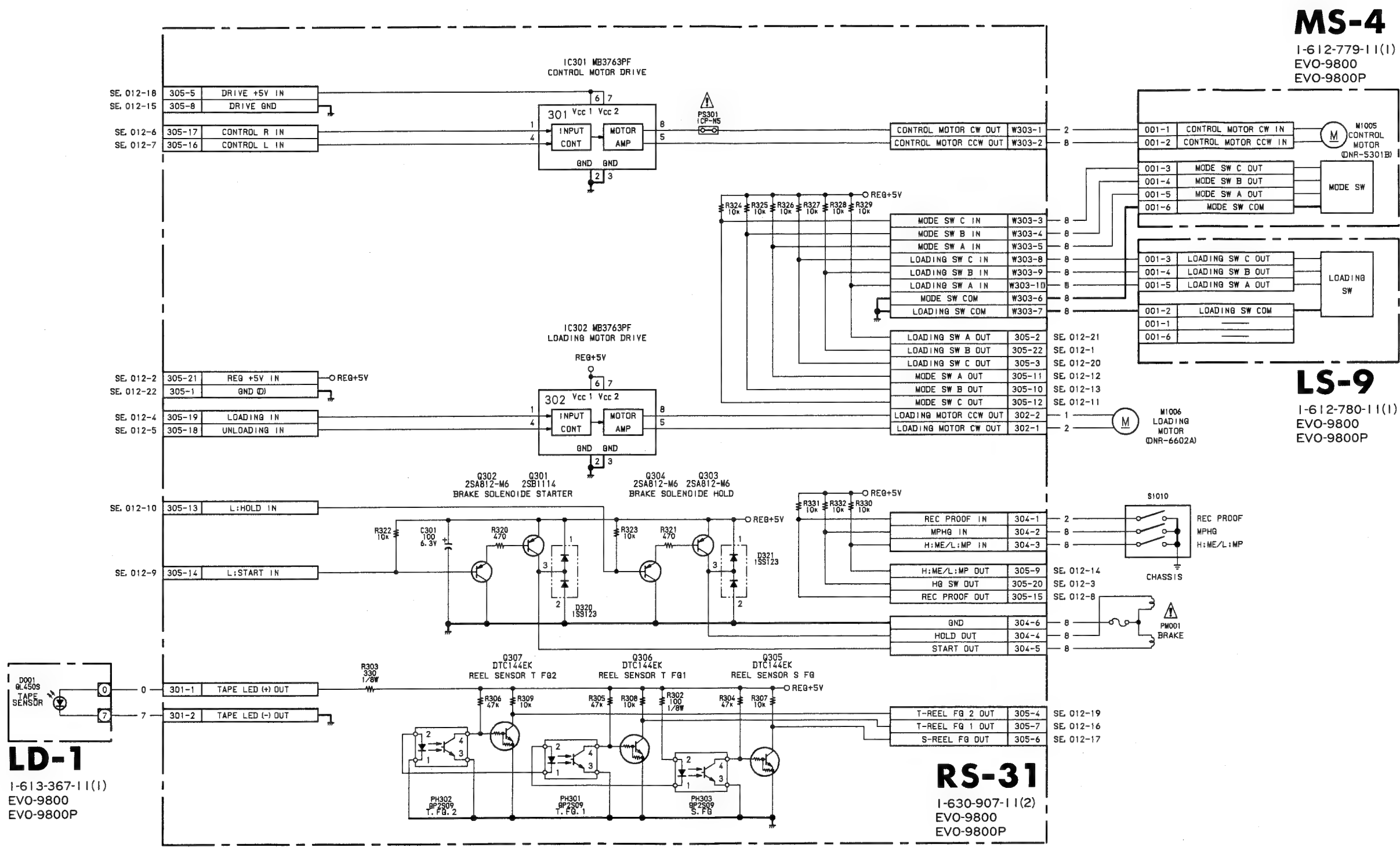


TS-74 —SOLDERING SIDE—
1-625-361-1
EVO-9800
EVO-9800P



RS-31; MECHANISM CONTROL
LD-1; TAPE SENSOR
LS-9; LOADING SWITCH
MS-4; MODE SWITCH

RS-3
LD-1

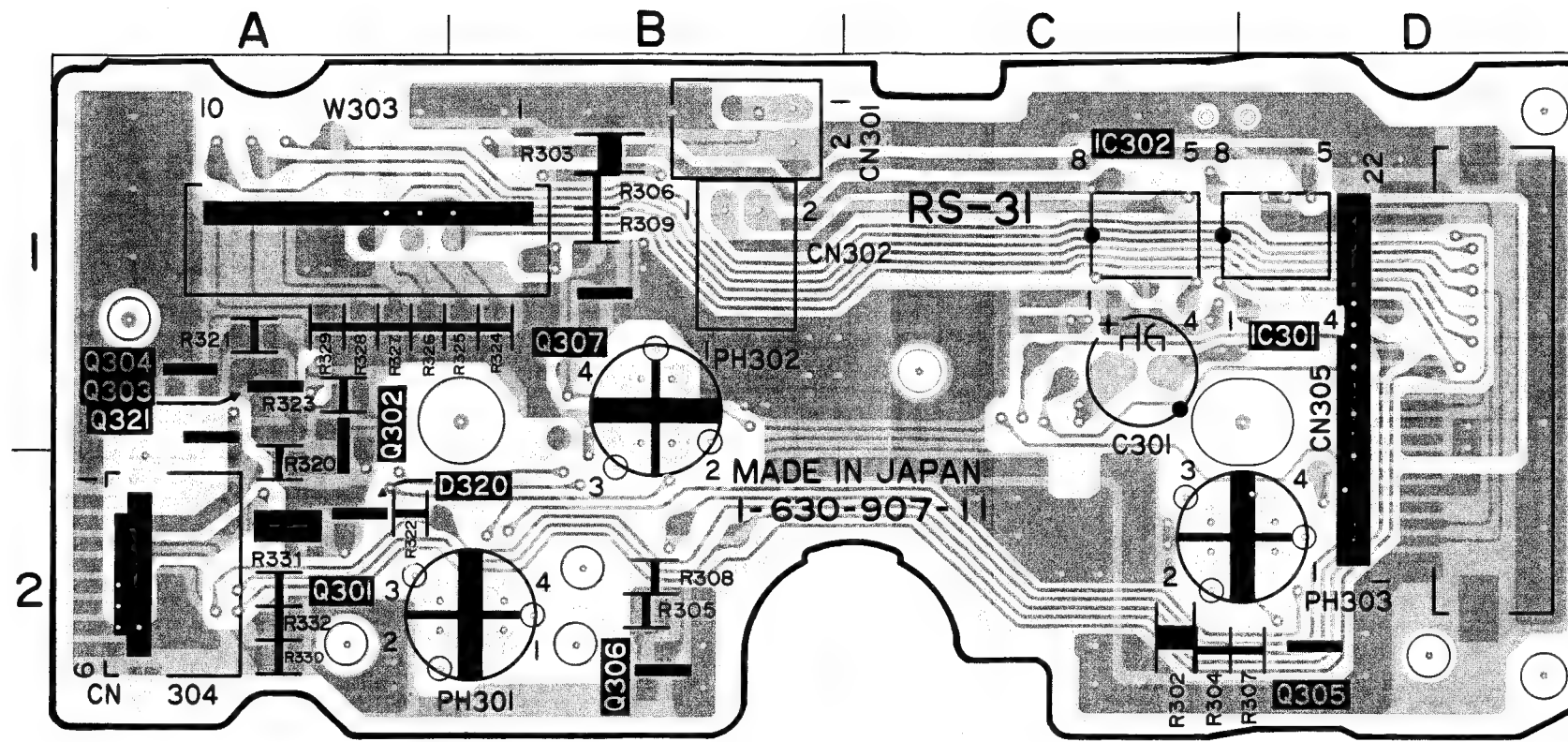


NOTE:
The Δ -marked components are critical to safety.
Replace only with same components as specified.

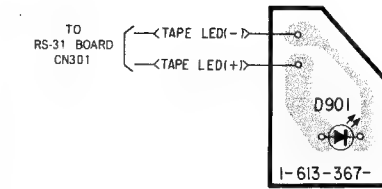
RS-31; MECHANISM CONTROL
LD-1; TAPE SENSOR

RS-31(1-630-907-11)C

CN301	B-1
CN302	B-1
CN304	A-2
CN305	D-1
D320	A-2
D321	A-1
IC301	D-1
IC302	C-1
PH301	B-2
PH302	B-1
PH303	C-2
Q301	A-2
Q302	A-1
Q303	A-1
Q304	A-1
Q305	D-2
Q306	B-2
Q307	B-1

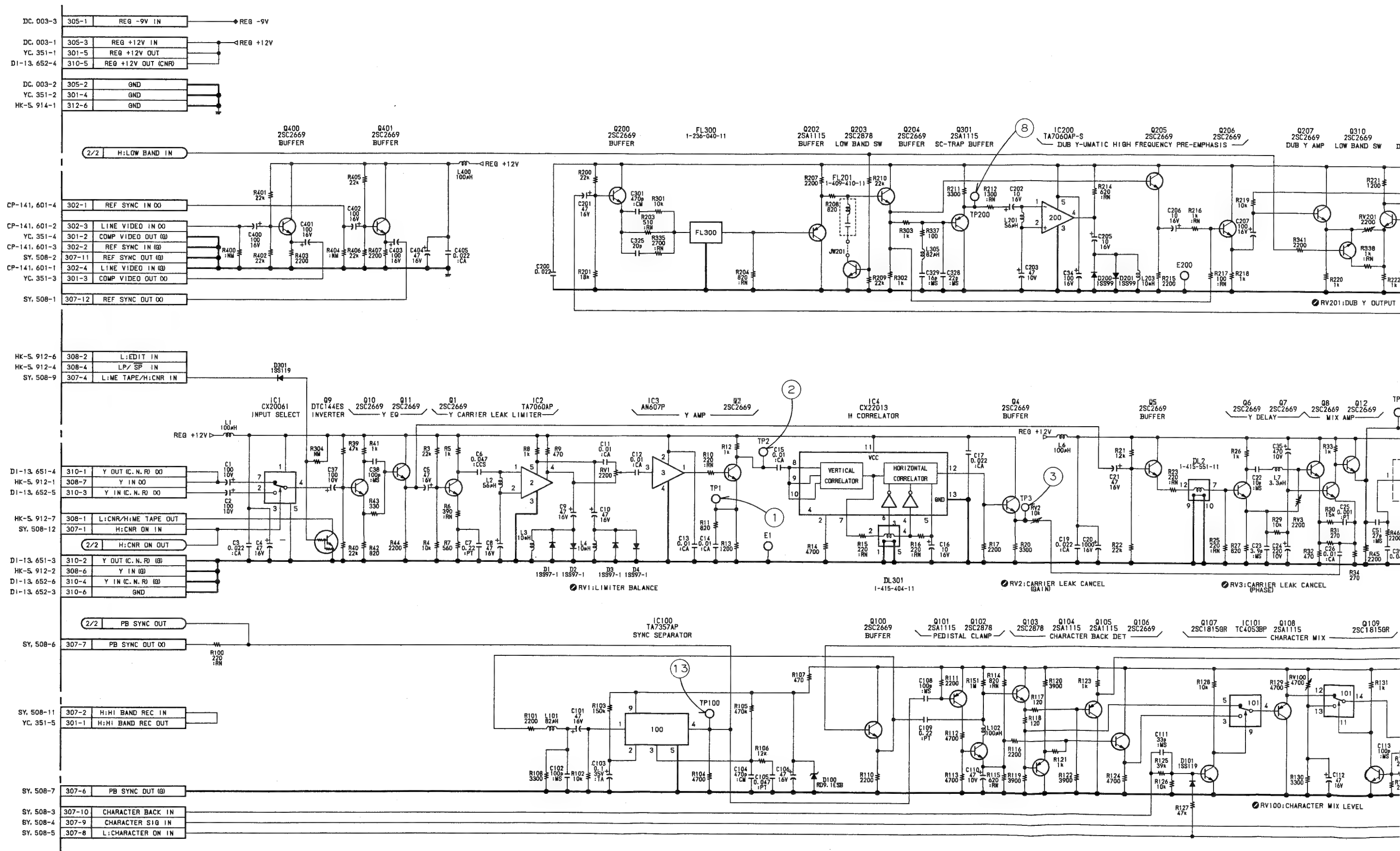


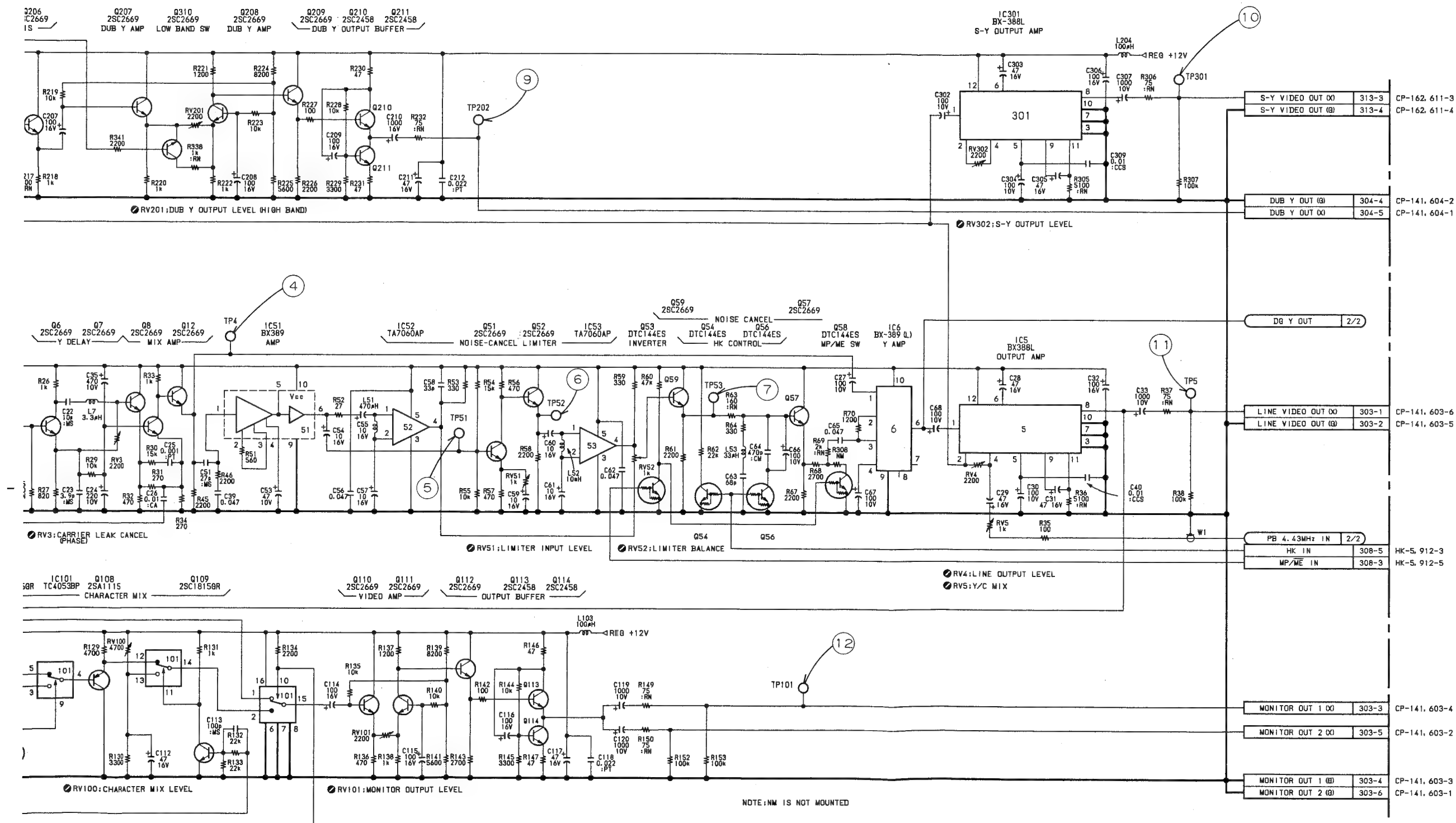
RS-31 —COMPONENT SIDE—
1-630-907-11(1)
EVO-9800
EVO-9800P



LD-1
—SOLDERING SIDE—
1-613-367-11
EVO-9800
EVO-9800P

VO-30 (1/2); Y INTERFACE

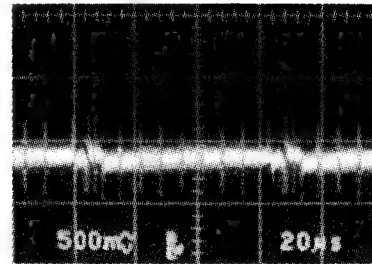




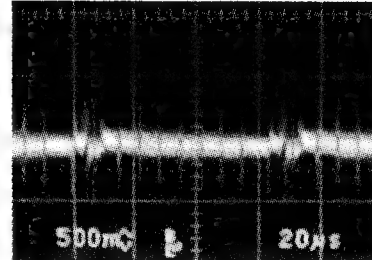
VO-30(1/2)

I-635-081-11, 12 (1)
EVO-9800P

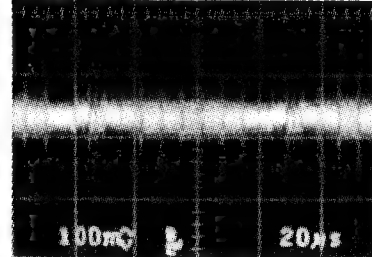
① TP1 EE mode



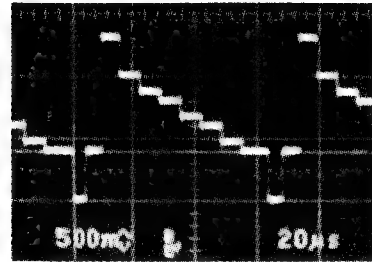
② TP2 EE mode



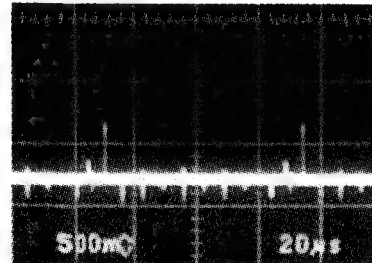
③ TP3 EE mode



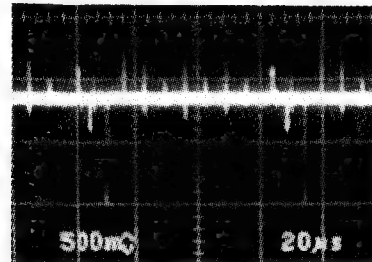
④ TP4 EE mode



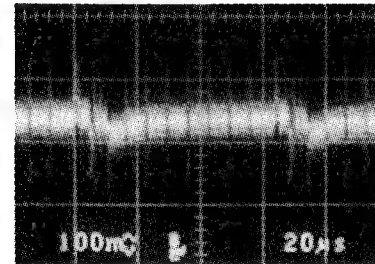
⑤ TP51 EE mode



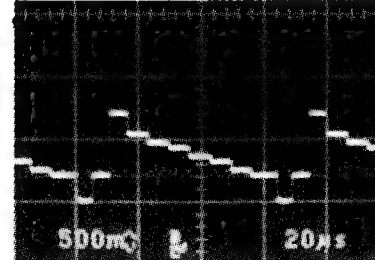
⑥ TP52 EE mode



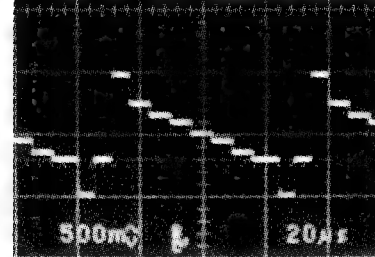
⑦ TP53 EE mode



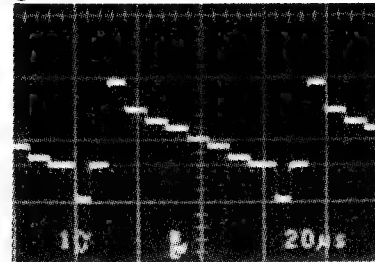
⑧ TP200 EE mode



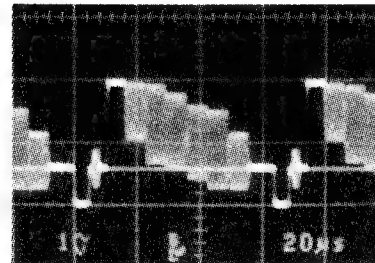
⑨ TP202 EE mode



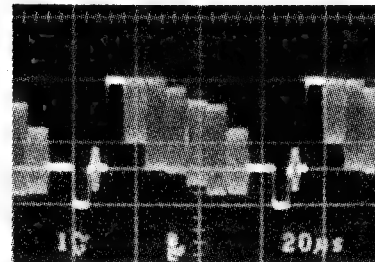
⑩ TP301 EE mode



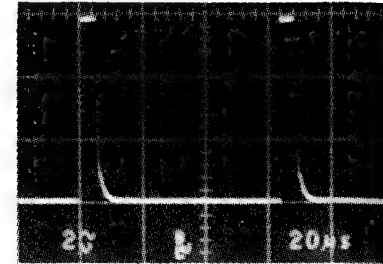
⑪ TP5 EE mode



⑫ TP101 EE mode



⑬ TP100 EE mode



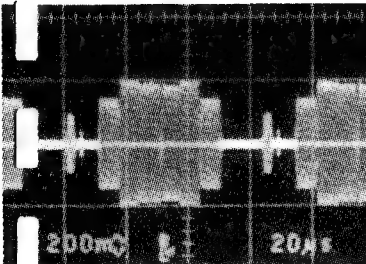
Measurement Condition

- Input Signal : Color Bars
- Cassette Tape : Alignment tape WR5-8CSE (Color Bars Signal)

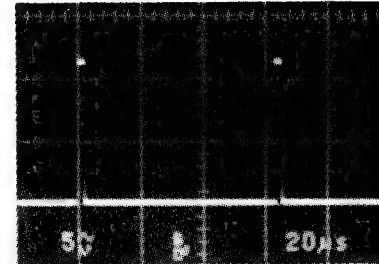
VO-30 (2/2); CHROMA INTERFACE

VO-30 (2/2)

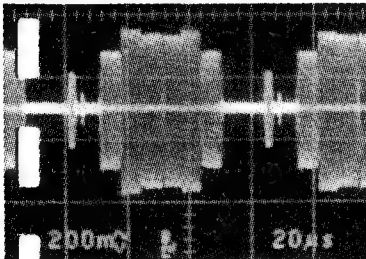
① TP409 EE mode



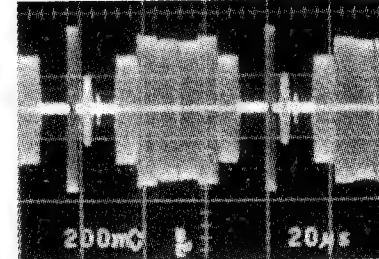
⑦ TP403 EE mode



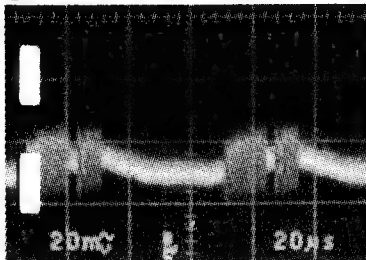
② TP406 EE mode



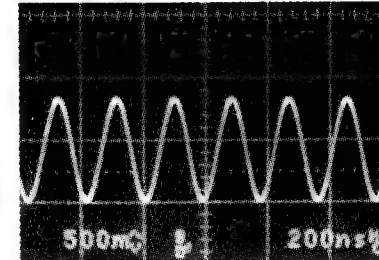
⑧ TP501 EE mode



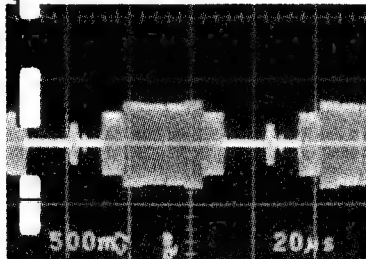
③ TP407 EE mode



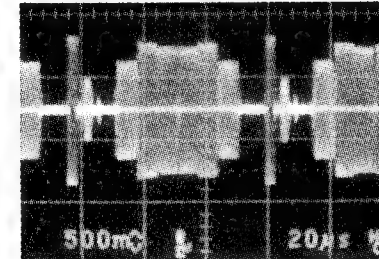
⑨ TP502 EE mode



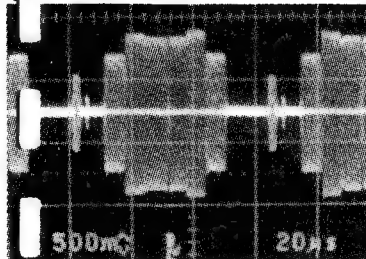
④ TP408 EE mode



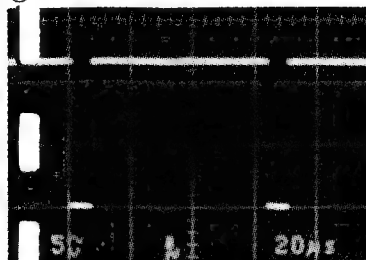
⑩ TP503 EE mode



⑤ TP601 EE mode

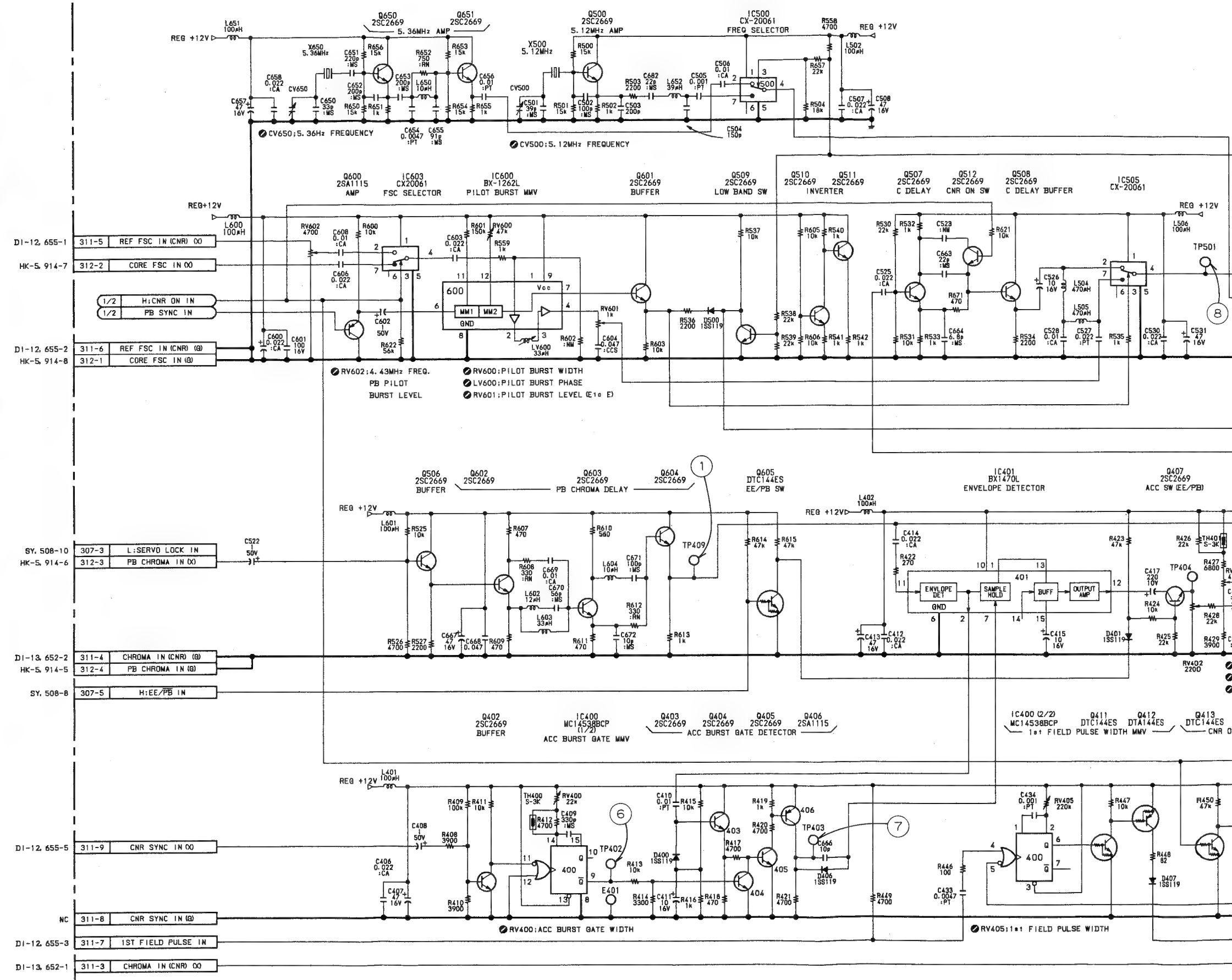


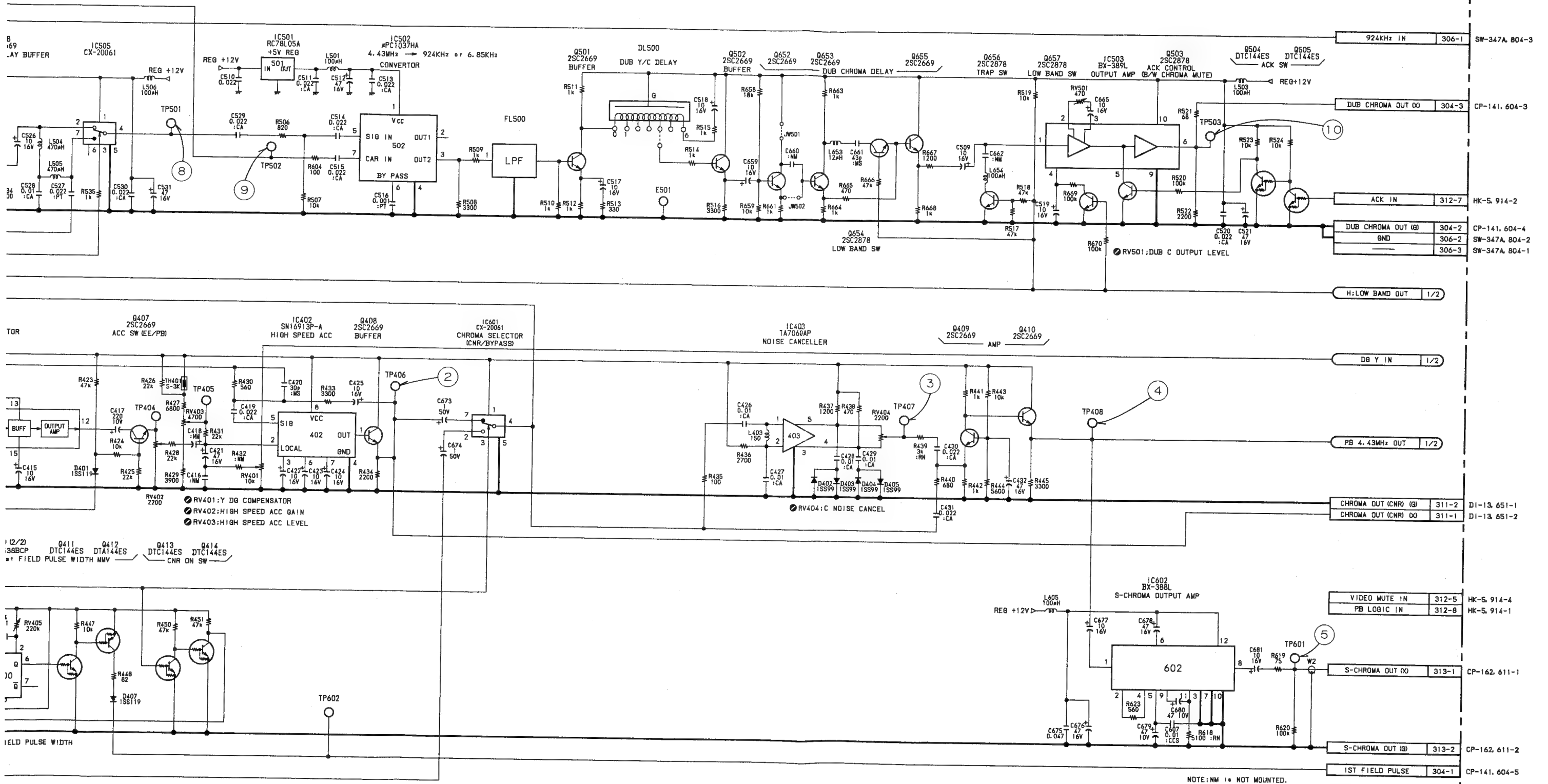
⑥ TP402 EE mode



Measurement Condition

- Input Signal : Color Bars
- Cassette Tape : Alignment tape WR5-8CSE (Color Bars Signal)





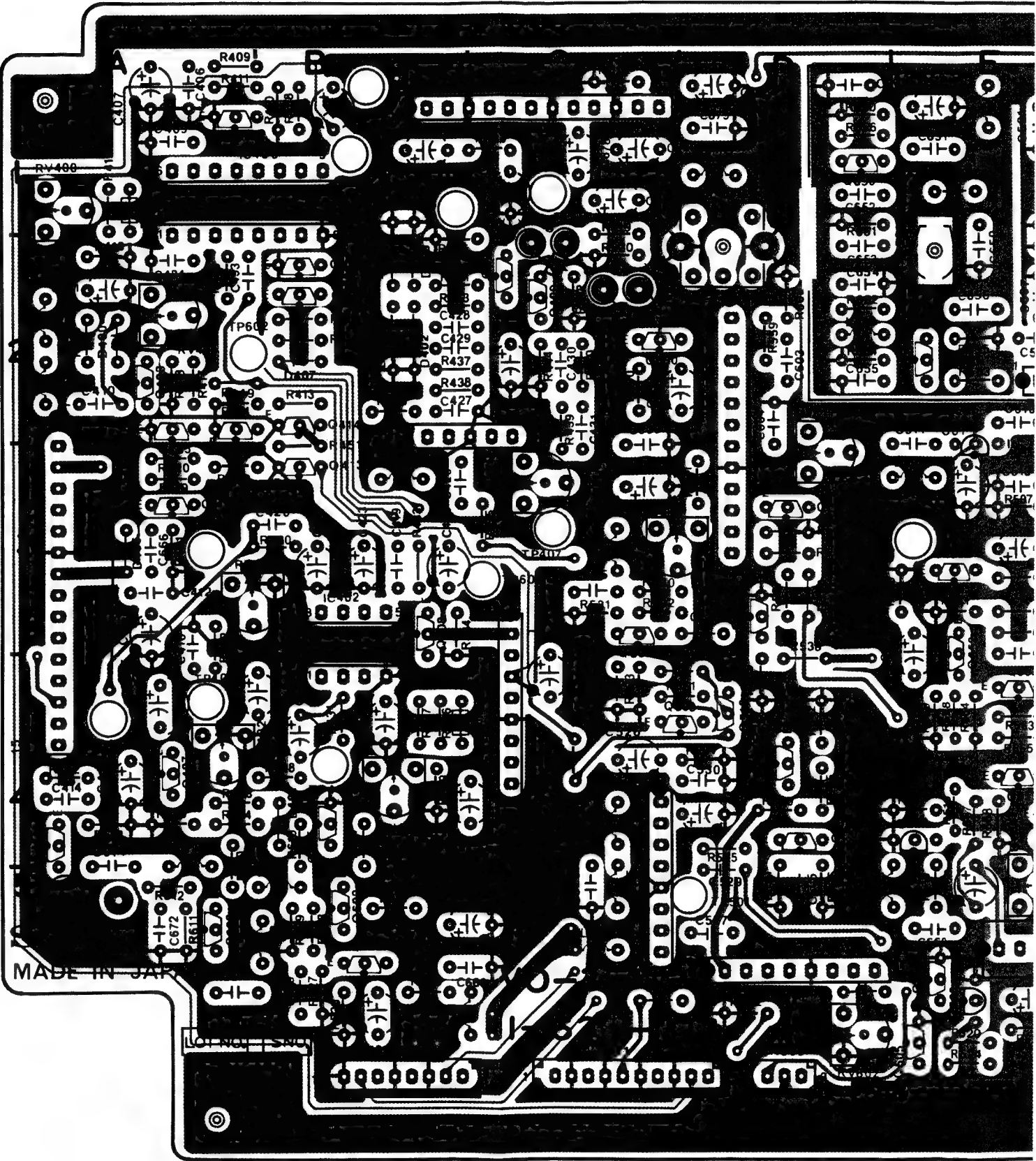
VO-30(2/2)

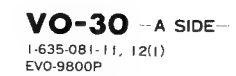
I-635-081-11, 12 (1)
EVO-9800P

VO-30; Y/C INTERFACE

VO-30(1-635-081-11,12) A SIDE

CN301	L-5	IC402	B-3	Q210	G-5	RV400	A-1
CN302	M-5	IC403	C-2	Q211	G-5	RV401	B-3
CN303	M-4	IC500	F-2	Q301	G-2	RV402	B-4
CN304	G-5	IC501	E-2	Q310	G-4	RV403	B-4
CN305	H-5	IC502	F-3	Q400	M-4	RV404	C-3
CN306	D-5	IC503	F-5	Q401	M-5	RV501	E-4
CN307	K-5	IC505	C-5	Q402	A-1	RV600	C-3
CN308	H-5	IC600	D-2	Q403	A-2	RV601	D-2
CN310	J-5	IC601	C-4	Q404	A-3	RV602	D-5
CN311	C-5	IC602	C-1	Q405	A-3		
CN312	B-5	IC603	D-5	Q406	A-3	TH400	A-1
CN313	F-5			Q407	A-4	TH401	C-4
		LV600	D-1	Q408	B-3		
CV500	E-1			Q409	C-2	X500	E-1
CV650	E-2	Q1	J-4	Q410	C-2	X650	E-1
		Q2	L-4	Q411	B-2		
D1	K-5	Q4	K-4	Q412	B-2		
D2	K-5	Q5	H-4	Q413	B-3		
D3	K-5	Q6	J-3	Q414	B-2		
D4	K-5	Q7	J-3	Q500	F-1		
D100	M-3	Q8	H-3	Q501	F-4		
D101	L-2	Q9	H-5	Q502	E-3		
D200	G-3	Q10	J-5	Q503	E-5		
D201	G-3	Q11	J-4	Q504	E-5		
D301	H-5	Q12	H-2	Q505	E-5		
D400	A-2	Q51	J-1	Q506	B-5		
D401	B-4	Q52	J-1	Q507	C-3		
D402	B-2	Q53	K-2	Q508	C-4		
D403	B-2	Q54	K-2	Q509	D-3		
D404	B-2	Q55	K-2	Q510	D-4		
D405	B-2	Q56	K-2	Q511	D-4		
D406	A-3	Q57	J-3	Q512	D-4		
D407	B-2	Q58	K-3	Q600	C-2		
D500	D-3	Q59	J-2	Q601	D-3		
		Q100	L-2	Q602	B-5		
DL2	J-4	Q101	L-2	Q603	A-5		
DL301	K-4	Q102	L-2	Q604	A-4		
DL500	F-3	Q103	K-2	Q605	B-4		
		Q104	L-2	Q650	D-1		
FL201	G-2	Q105	L-1	Q651	E-2		
FL300	G-1	Q106	L-1	Q652	E-3		
FL500	F-3	Q107	L-1	Q653	E-4		
		Q108	L-1	Q654	E-4		
IC1	J-5	Q109	M-2	Q655	E-4		
IC2	J-5	Q110	M-1	Q656	E-4		
IC3	L-5	Q111	M-1	Q657	F-5		
IC4	K-4	Q112	M-2			RV1	K-5
IC5	M-3	Q113	M-2			RV2	J-4
IC6	K-3	Q114	M-2			RV3	J-3
IC51	J-2	Q200	F-1			RV4	L-3
IC52	J-2	Q202	G-2			RV5	L-4
IC53	J-1	Q203	F-2			RV51	J-1
IC100	L-3	Q204	H-2			RV52	K-1
IC101	L-1	Q205	G-3			RV100	L-1
IC200	G-3	Q206	H-3			RV101	M-1
IC301	H-1	Q207	G-3			RV201	H-4
IC400	B-1	Q208	G-4			RV302	G-1
IC401	A-3	Q209	G-4				



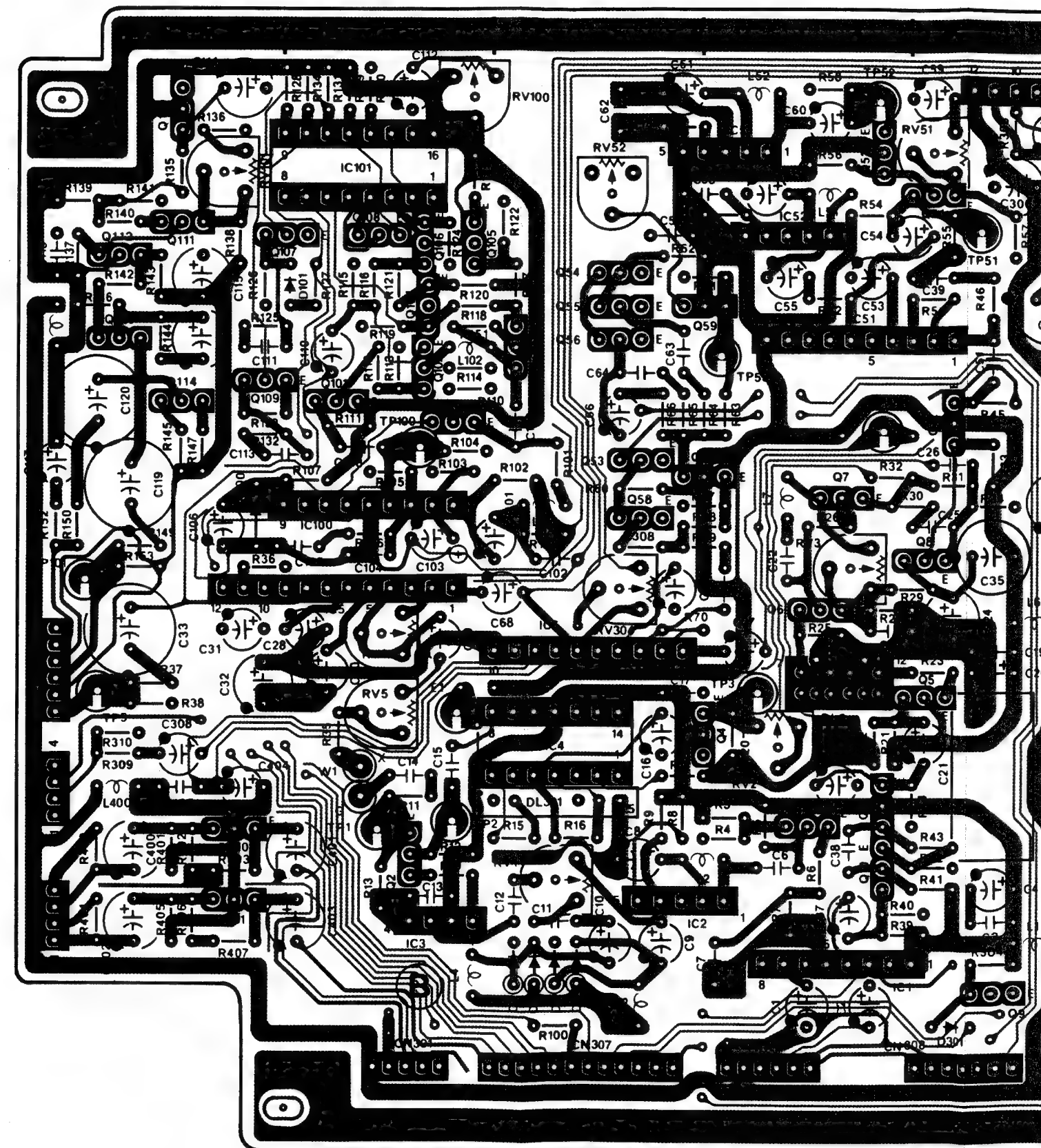


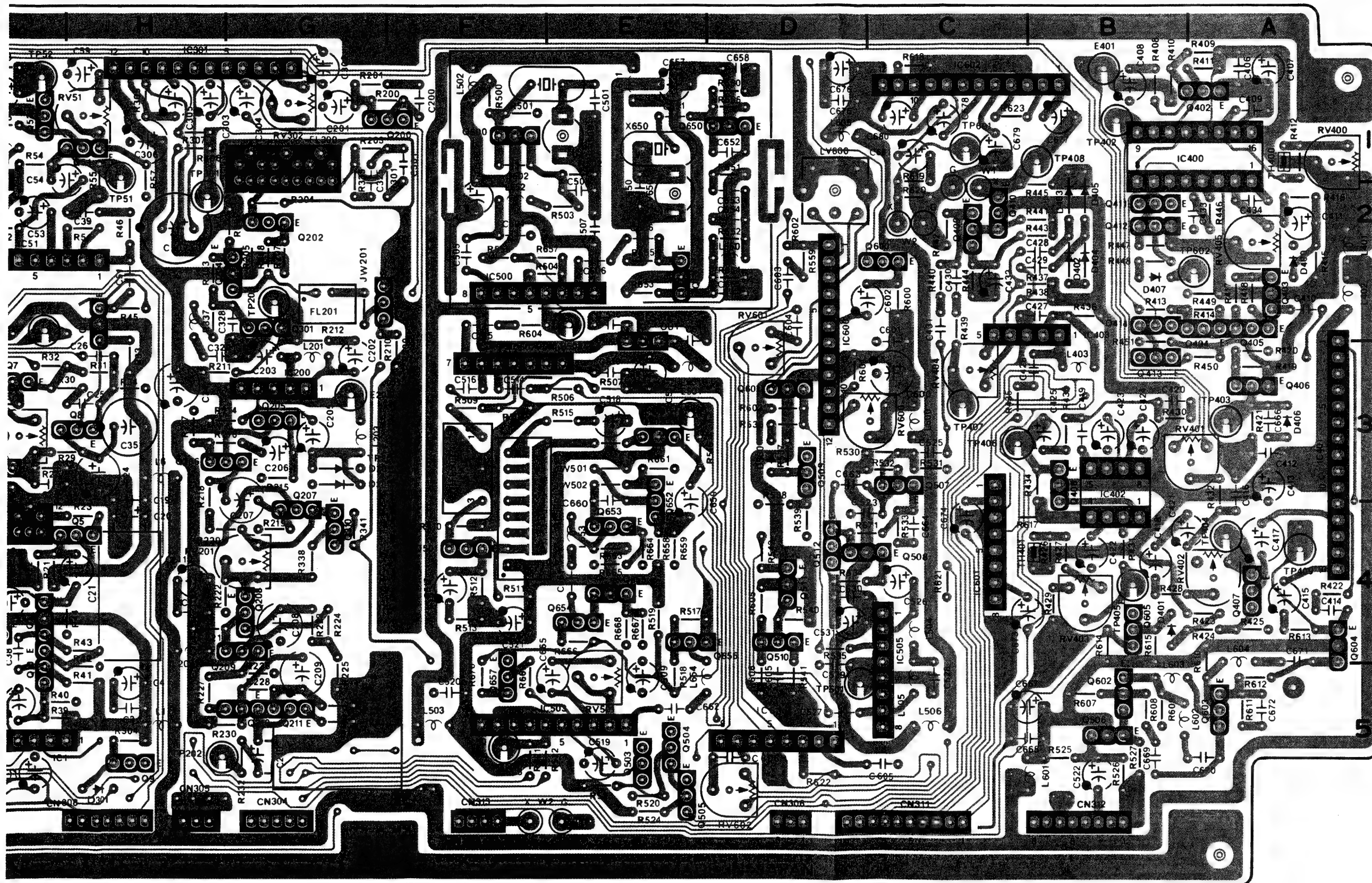
13-27

VO-30; Y/C INTERFACE

VO-30(1-635-081-11, 12) B SIDE

E1	L-4
E200	G-3
E401	B-1
E501	E-3
TP1	L-4
TP2	L-4
TP3	J-4
TP4	J-2
TP5	M-4
TP51	H-2
TP52	J-1
TP53	J-2
TP100	L-2
TP101	M-3
TP200	G-2
TP202	H-5
TP301	H-2
TP402	B-1
TP403	A-3
TP404	A-4
TP405	B-4
TP406	C-3
TP407	C-3
TP408	B-1
TP409	A-4
TP501	D-5
TP502	E-3
TP503	F-5
TP601	C-1
TP602	A-2

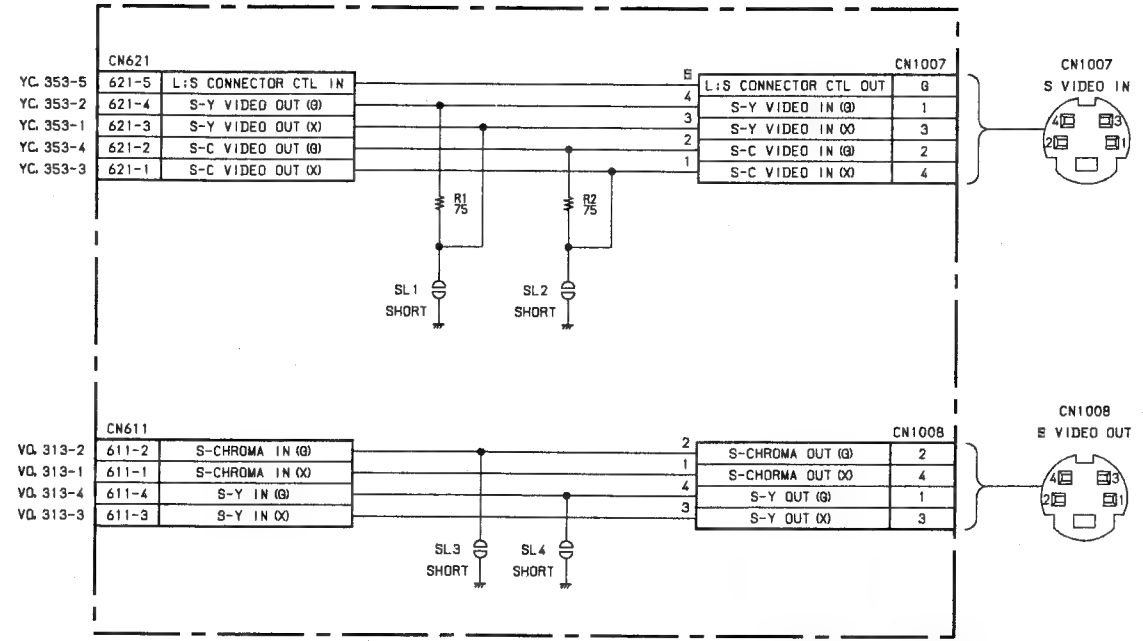




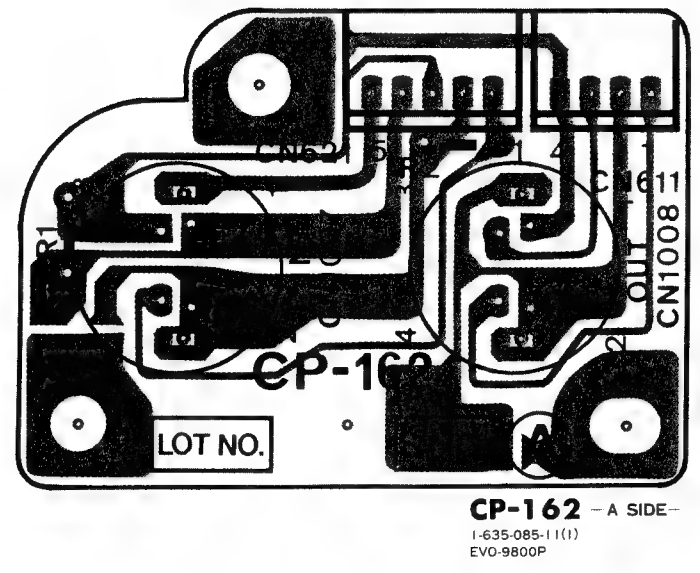
VO-30 -B SIDE-
1-635-081-11, 12(1)
EVO-9800P

B Side is the same as SOLDER Side

CP-162; S VIDEO CONNECTOR PANEL



CP-162
I-635-085-11(1)
EVO-9800P



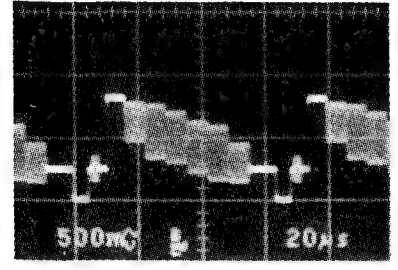
CP-162 - A SIDE-
I-635-085-11(1)
EVO-9800P

A Side is the same as COMPONENT Side

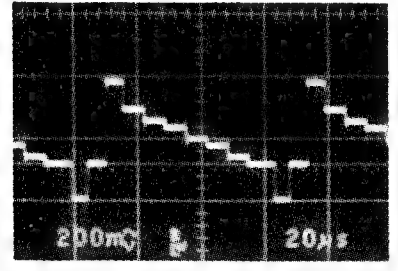
YC-46; Y/C SEPARATOR

YC-46

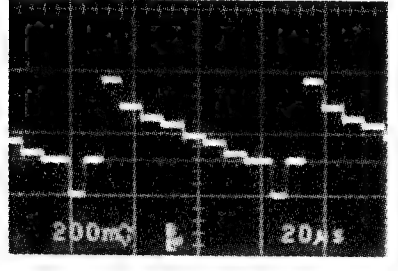
① TP100 EE mode



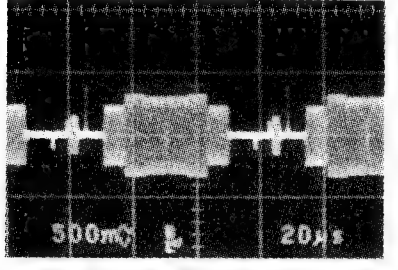
② TP102 EE mode



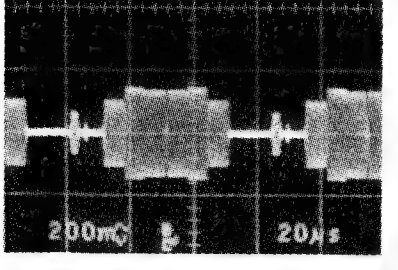
③ TP103 EE mode



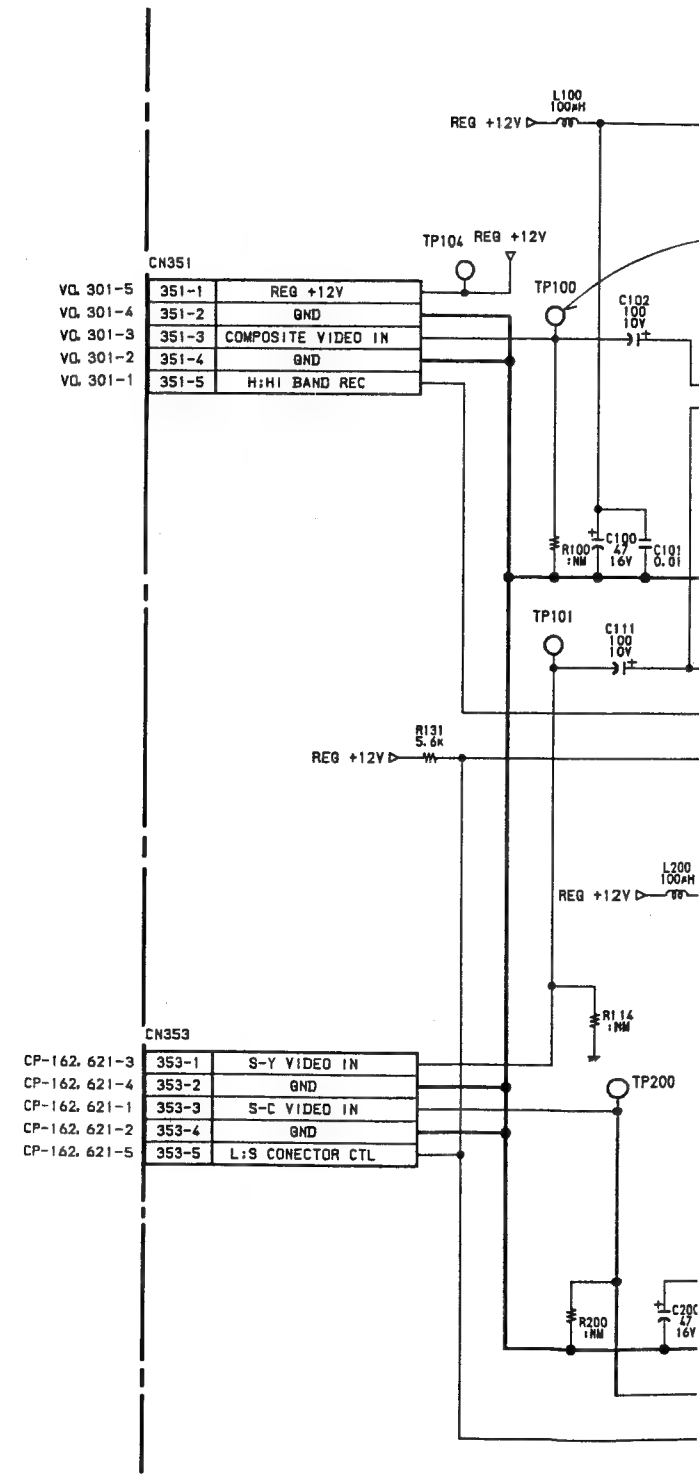
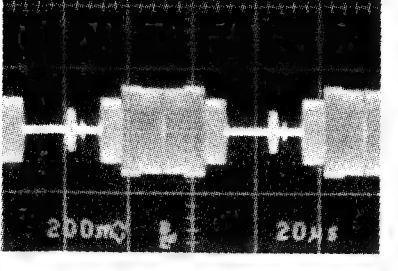
④ TP201 EE mode



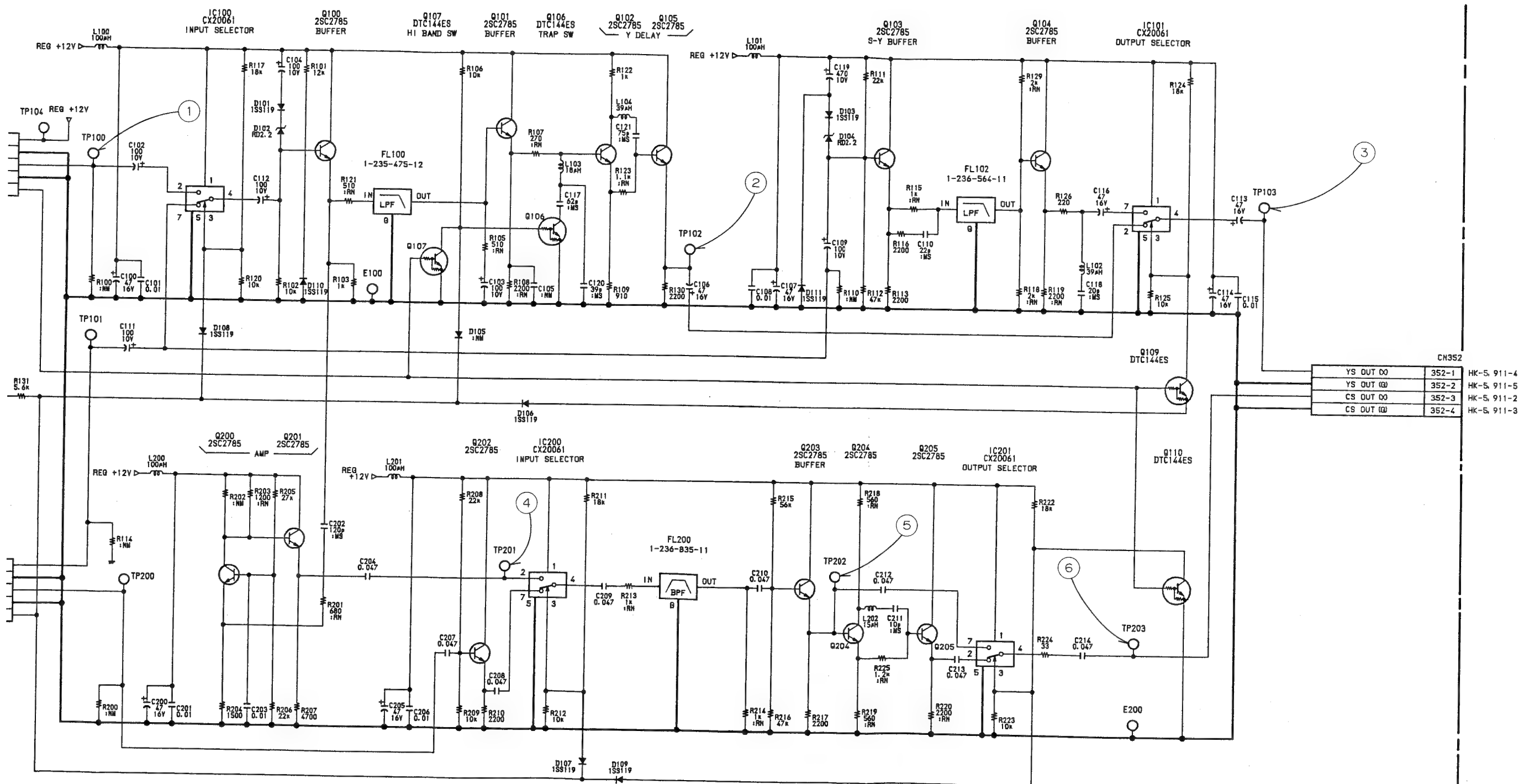
⑤ TP202 EE mode



⑥ TP203 EE mode



Measurement Condition
• Input Signal : Color Bars
• Cassette Tape : Alignment tape WR5-8CSE
(Color Bars Signal)

**YC-46**I-635-084-1 (1)
EVO-9800P

YC-46; Y/C SEPARATOR

YC-46(1-635-084-11) A SIDE

CN351	B-1
CN532	F-1
CN533	D-1

D101	A-3
D102	A-3
D103	C-2
D104	C-2
D106	C-4
D107	D-3
D108	B-2
D109	D-4

E100	A-1S
E200	E-2S

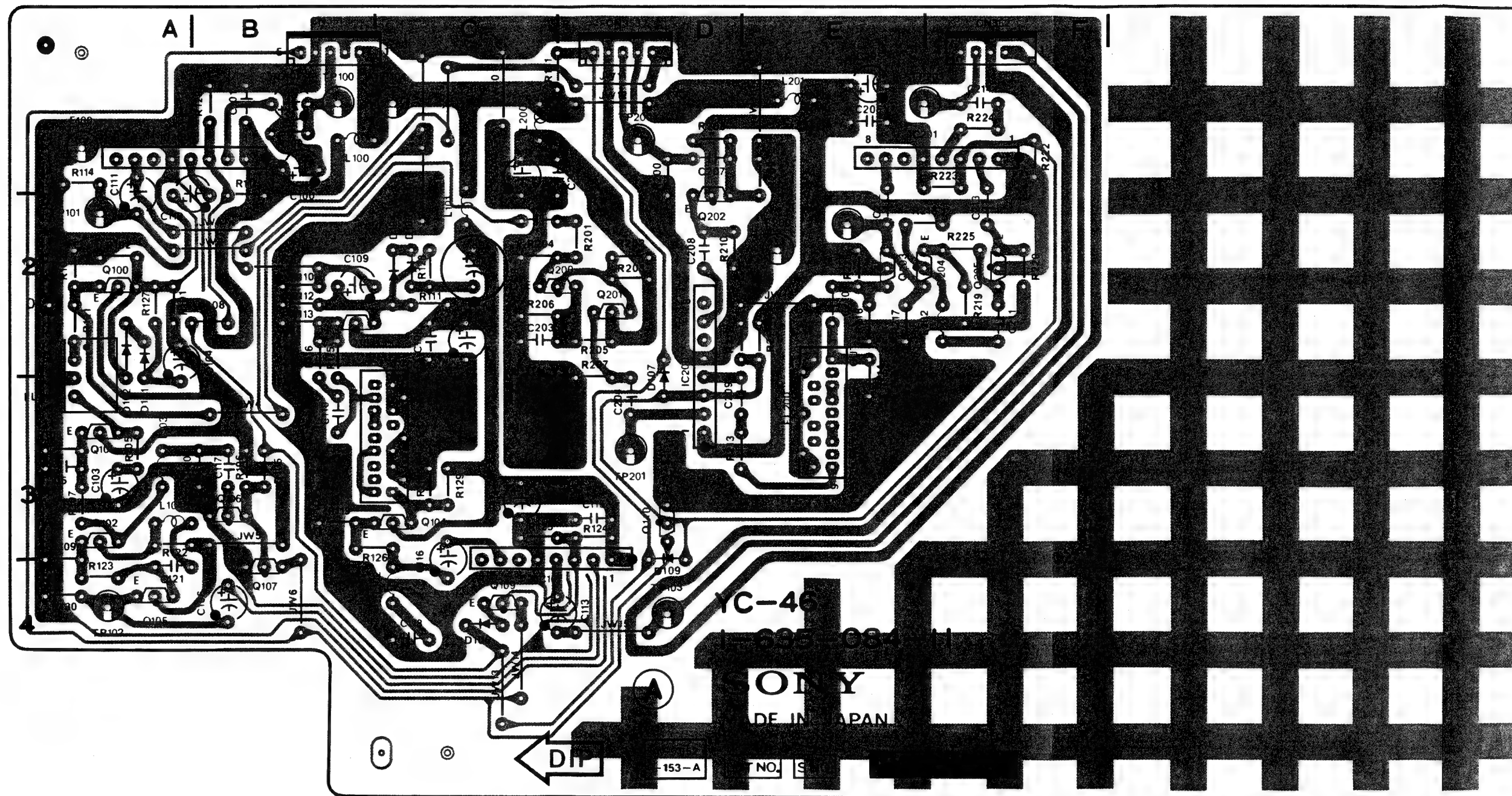
FL100	A-3
FL102	C-3
FL200	E-3

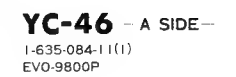
IC100	A-1
IC101	C-4
IC200	D-2
IC201	E-1

Q100	A-2
Q101	A-3
Q102	A-3
Q103	B-2
Q104	C-3
Q105	A-4
Q106	B-3
Q107	B-4
Q109	C-4
Q110	D-3
Q200	D-2
Q201	D-2
Q202	D-2
Q203	E-2
Q204	F-2
Q205	F-2

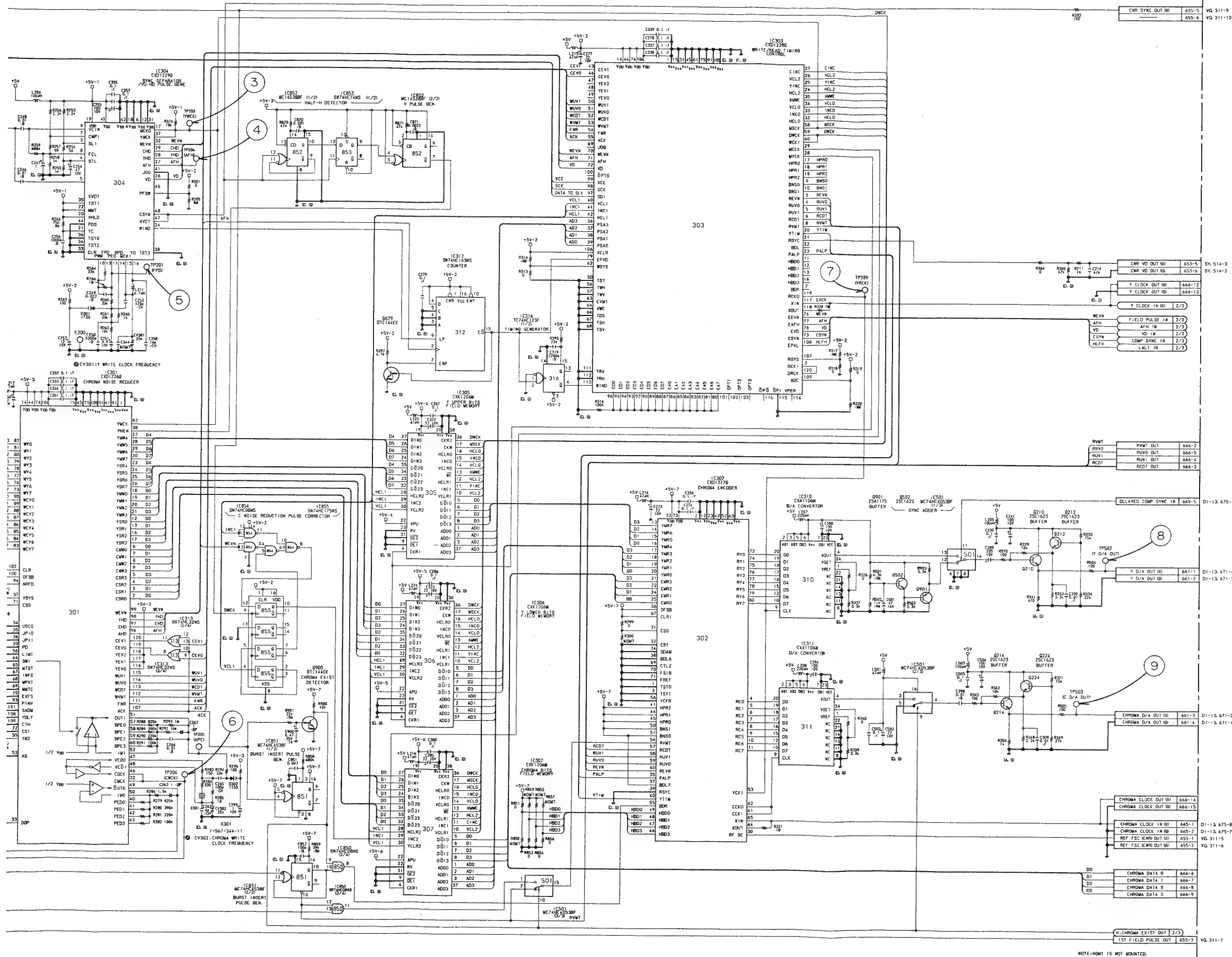
TP100	B-1S
TP101	A-2S
TP102	A-4S
TP103	D-4S
TP104	C-1S
TP200	D-1S
TP201	D-3S
TP202	E-2S
TP203	E-1S

S: B SIDE (SOLDERING SIDE)

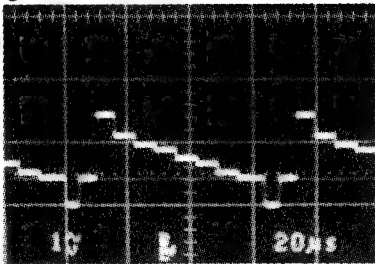




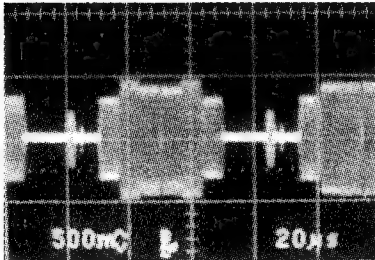
13-31



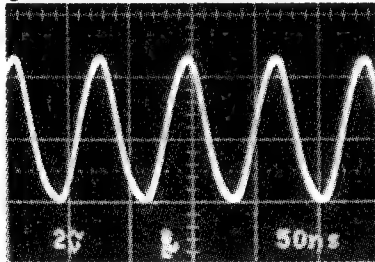
① TP500 EE mode



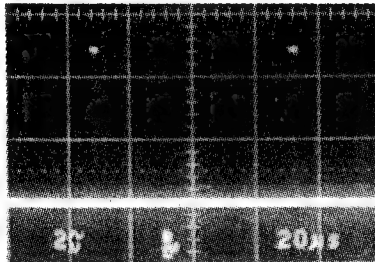
② TP501 EE mode



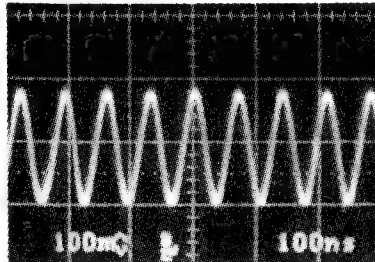
③ TP203 EE mode 14.21MHz



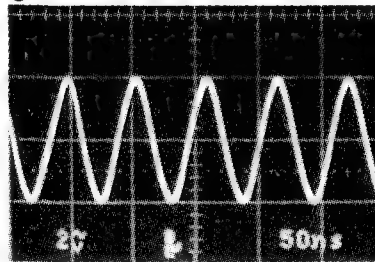
④ TP204 EE mode



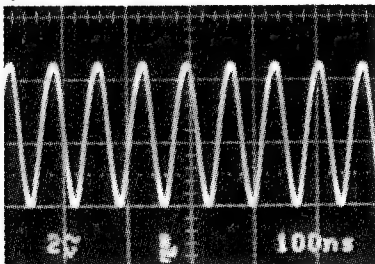
⑤ TP201 EE mode 14.21MHz



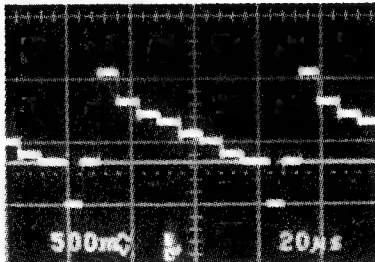
⑥ TP206 EE mode 17.73MHz



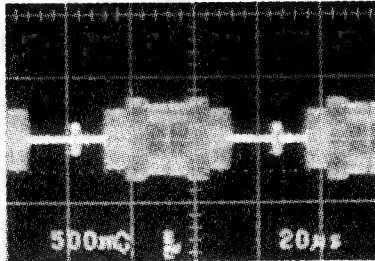
⑦ TP209 EE mode 14.21MHz



⑧ TP502 EE mode



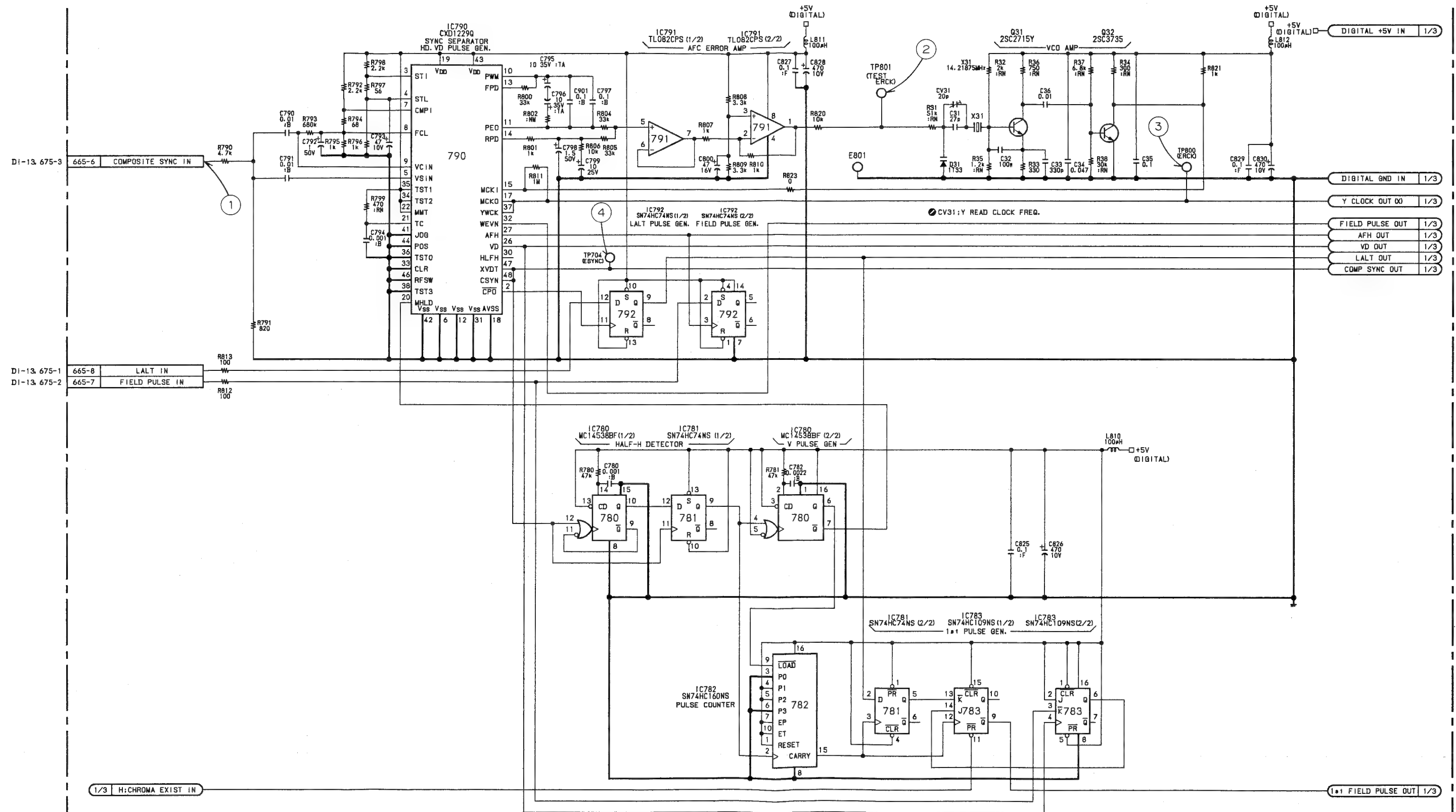
⑨ TP503 EE mode



Measurement Condition

- Input Signal : Color Bars
- Cassette Tape : Alignment tape WR5-8CSE (Color Bars Signal)

DI-12 (2/3); READ TIMING CONTROL PULSE GENERATOR

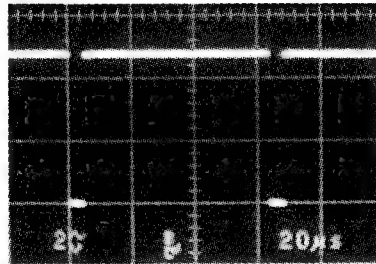


DI-12(2/3)

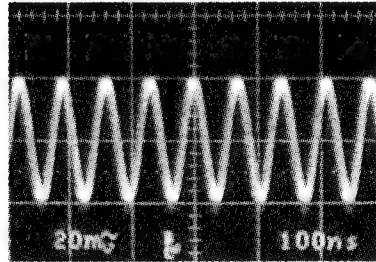
I-635-082-11, 12 (1)
EVO-9800P

DI-12 (2/3)

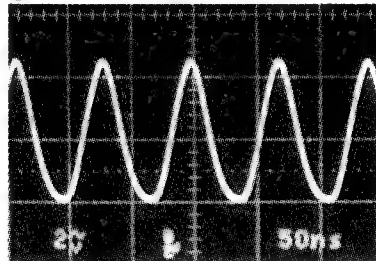
① CN665-6 EE mode



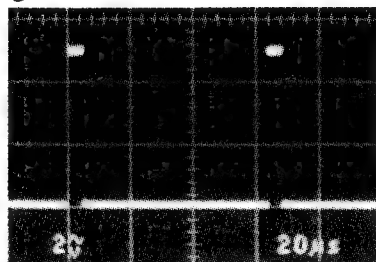
② TP801 EE mode 14.21MHz



③ TP800 EE mode 14.21MHz

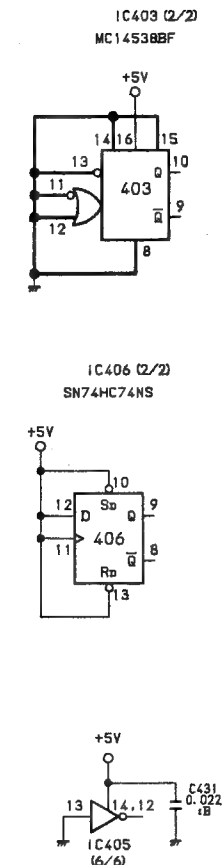


④ TP704 EE mode

**Measurement Condition**

- Input Signal : Color Bars
- Cassette Tape : Alignment tape WR5-8CSE
(Color Bars Signal)

DI-12 (3/3); CTL DETECT/CAPSTAN FG COMPARE



DI-1 2(3/3)

1-635-082-11, 12 (1)
EVO-9800P

DI-12; DIGITAL CHROMA NOISE REDUCER

DI-12(1-635-082-11, 12) A SIDE

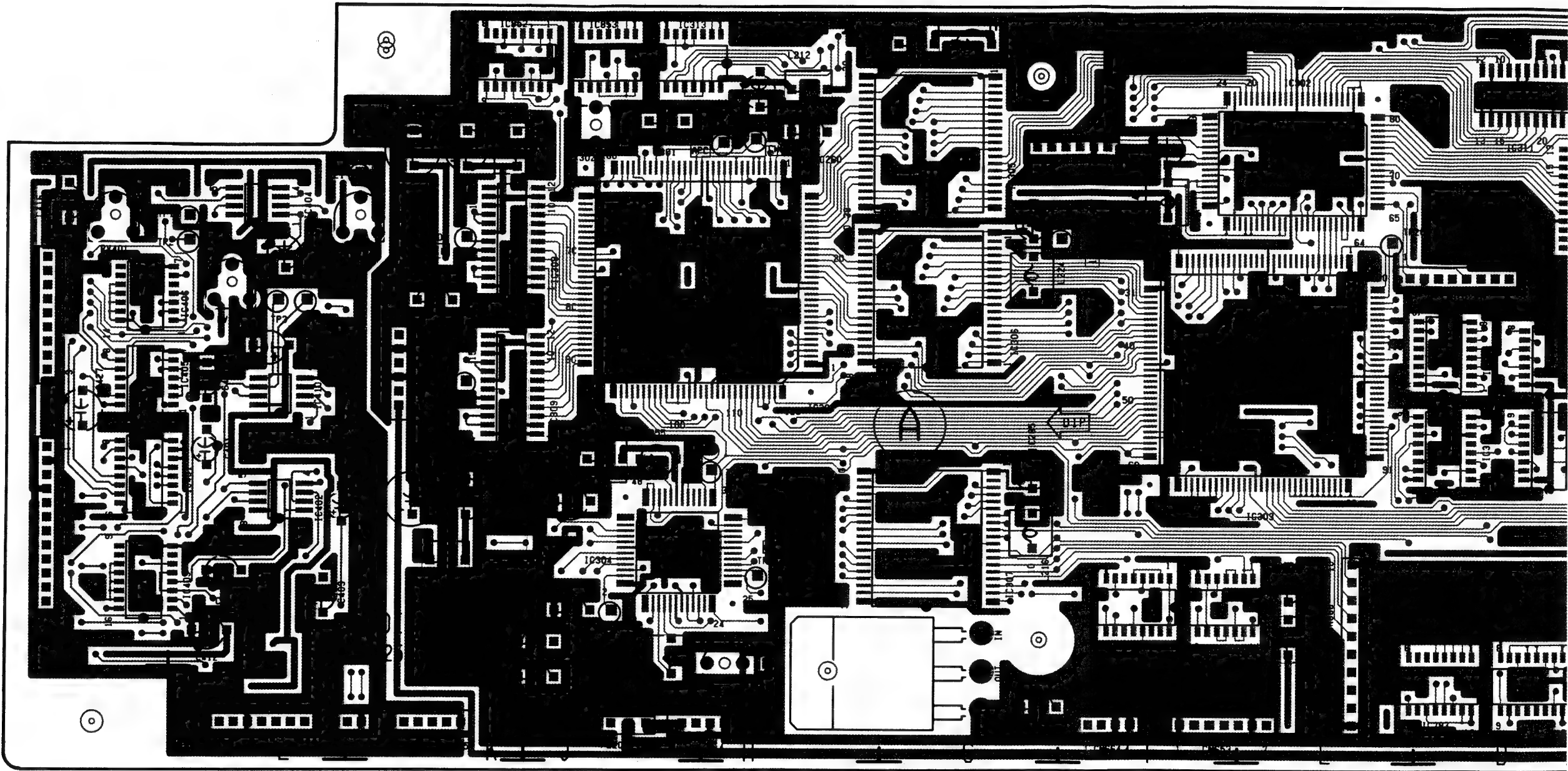
CN 51	L-1	TP201	J-1
CN552	K-1	TP204	H-2
CN553	M-2	TP209	E-4
CN 54	M-3	TP500	K-3
CN 55	K-1	TP501	K-3
CN653	F-1	TP502	B-4
CN654	H-1	TP503	B-4
CN 55	F-4	TP704	B-1
CN 51	B-4	TP705	F-3
CN662	K-3		
CN663	B-1	X31	A-3
CN 54	F-1	X301	J-4
CN 55	D-3		

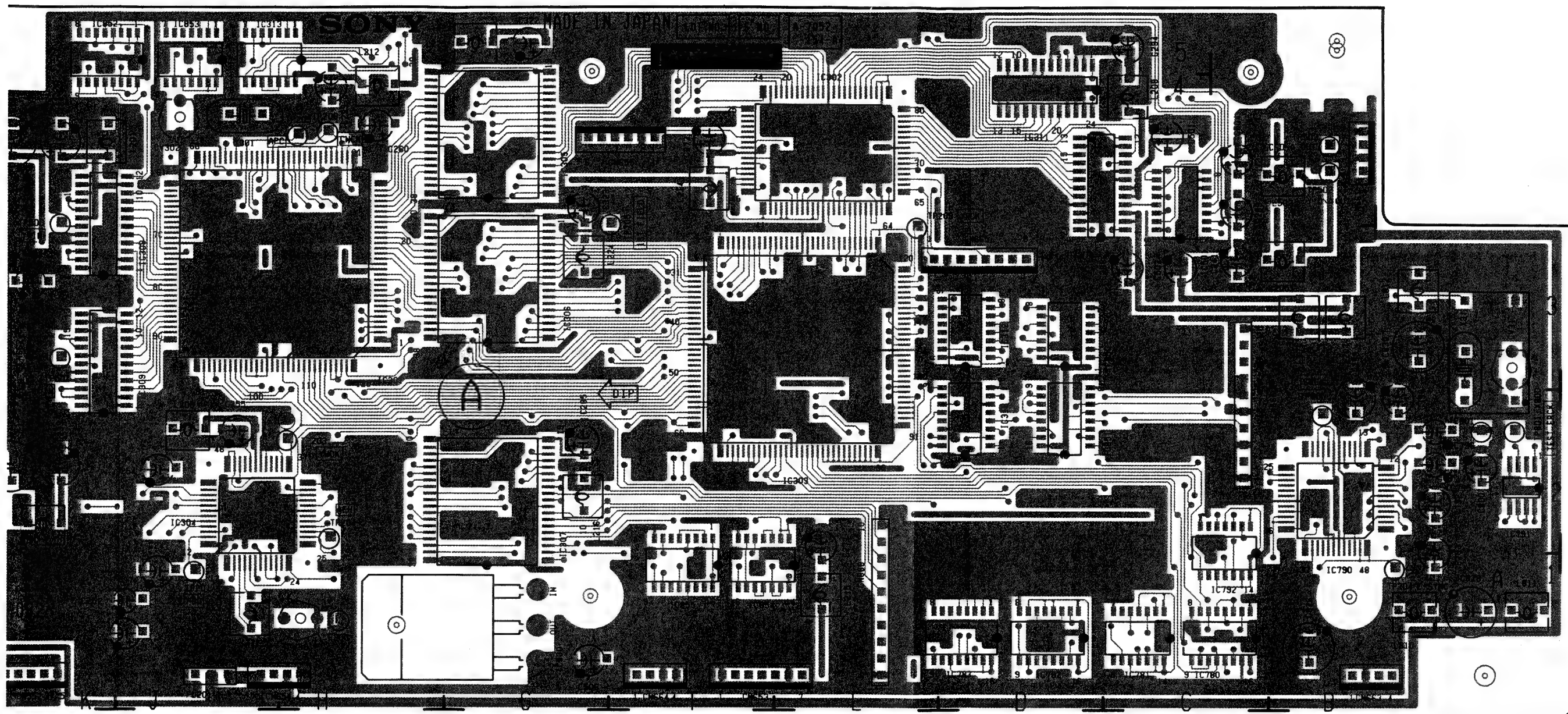
CV 1	A-3
CV 11	H-1
CV 12	J-4

FL 1	J-1
------	-----

C301	H-3
C302	E-4
C3 3	E-2
C3 4	J-2
C308	J-3
C309	J-2
C3 3	C-4
C3 1	D-4
C312	D-3
C313	J-5
C3 5	D-2
C4 1	L-2
C402	L-2
C403	L-1
C4 4	L-4
C4 5	L-3
C406	L-3
C4 9	L-3
C5 3	G-1
C5 1	C-3
C780	C-1
C7 1	C-1
C7 2	D-1
C7 3	D-1
C790	B-1
C7 1	A-2
C7 2	C-1
C850	D-3
C851	D-2
C8 2	K-5
C8 3	J-5
C854	F-1
C855	F-1

IV 1	M-3
IV402	K-3
IV 3	L-3





DI-12 A SIDE
1-635-082-11, 12(1)
EVO-9800P

A Side is the same as COMPONENT Side

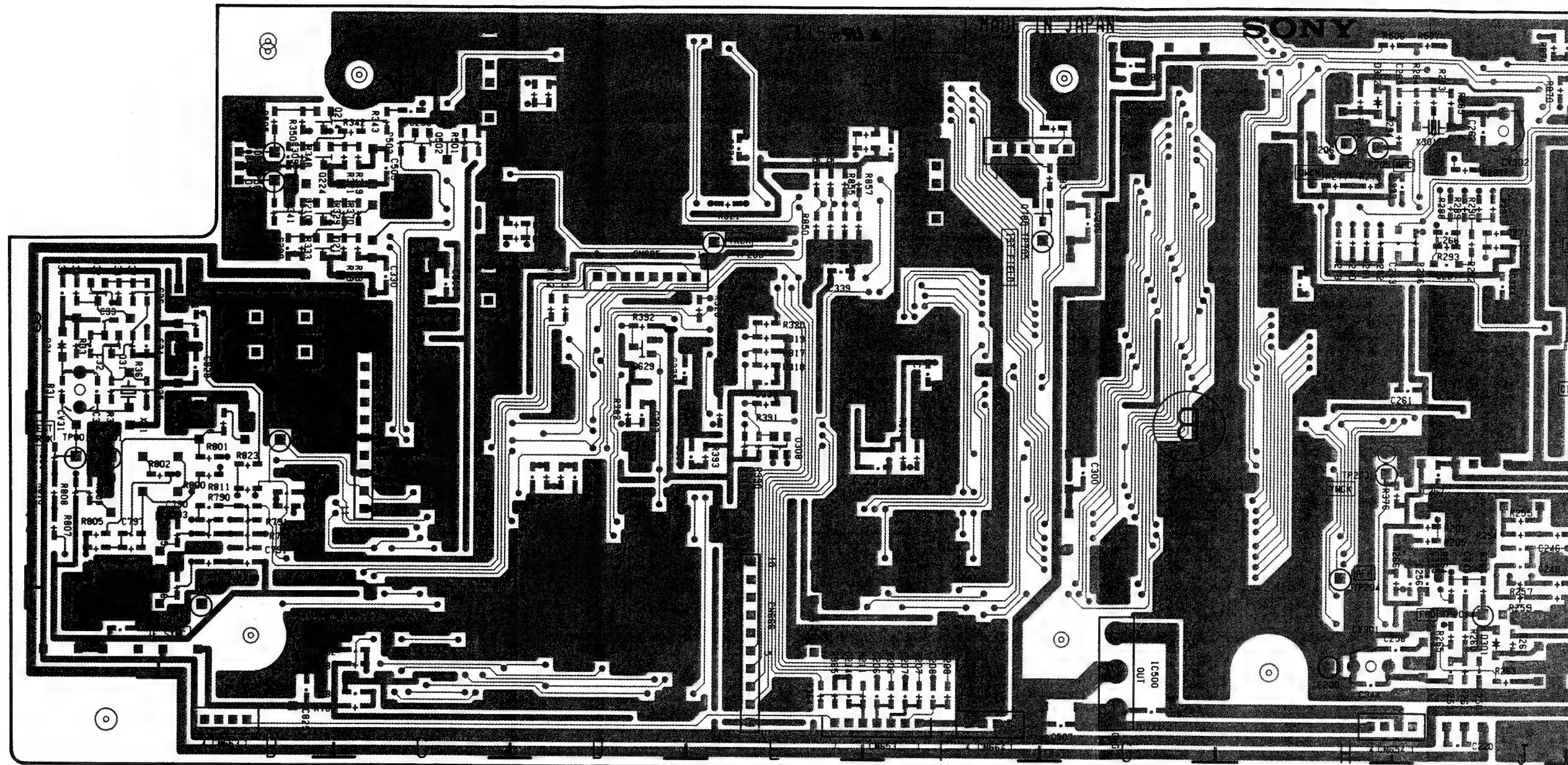
2(1-635-082-11, 12) B SIDE

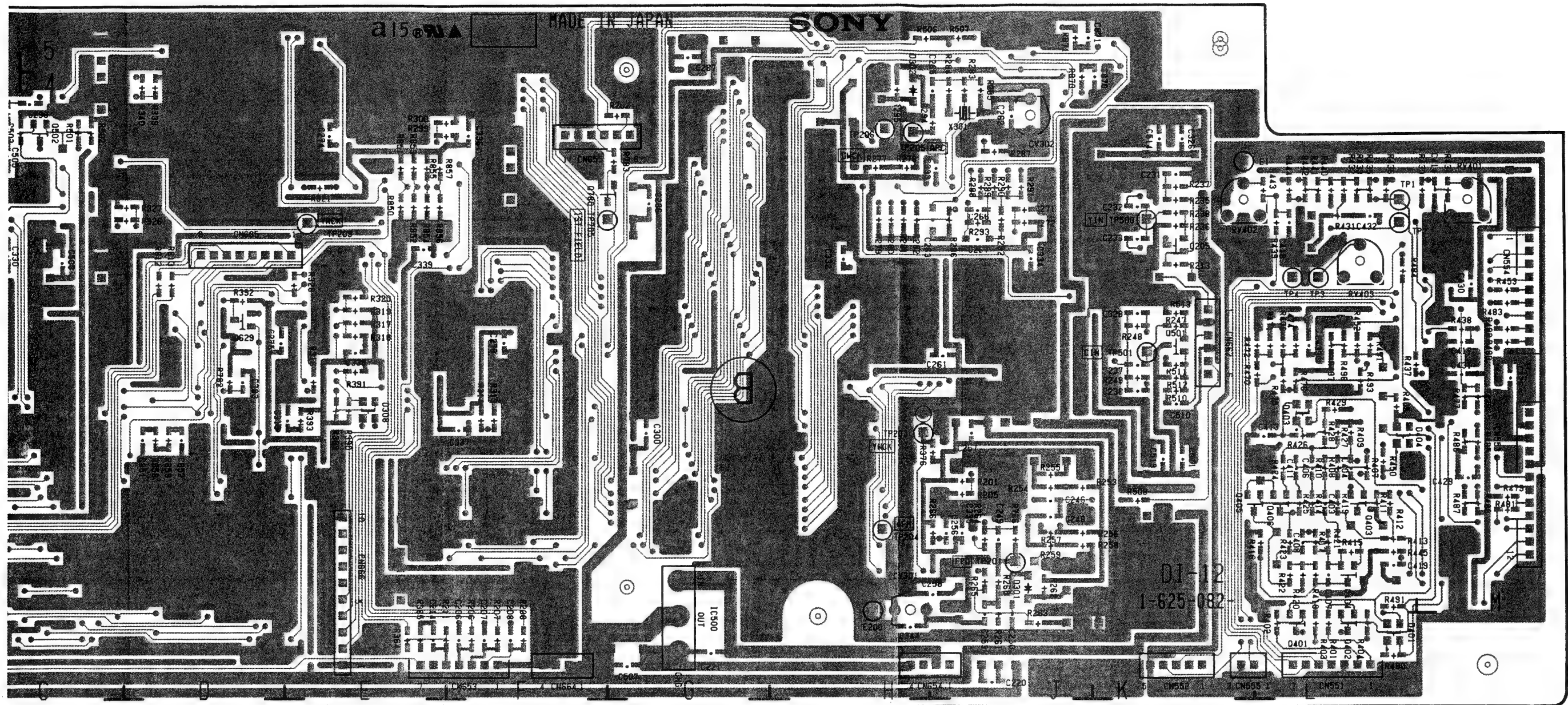
A-3
J-1
H-4
E-2
L-1
L-2

L-4
H-1
A-2

A-3
A-3
K-3
B-4
B-3
B-4
B-4
L-1
L-1
L-2
L-1
K-2
L-2
K-3
C-4
D-3
F-4

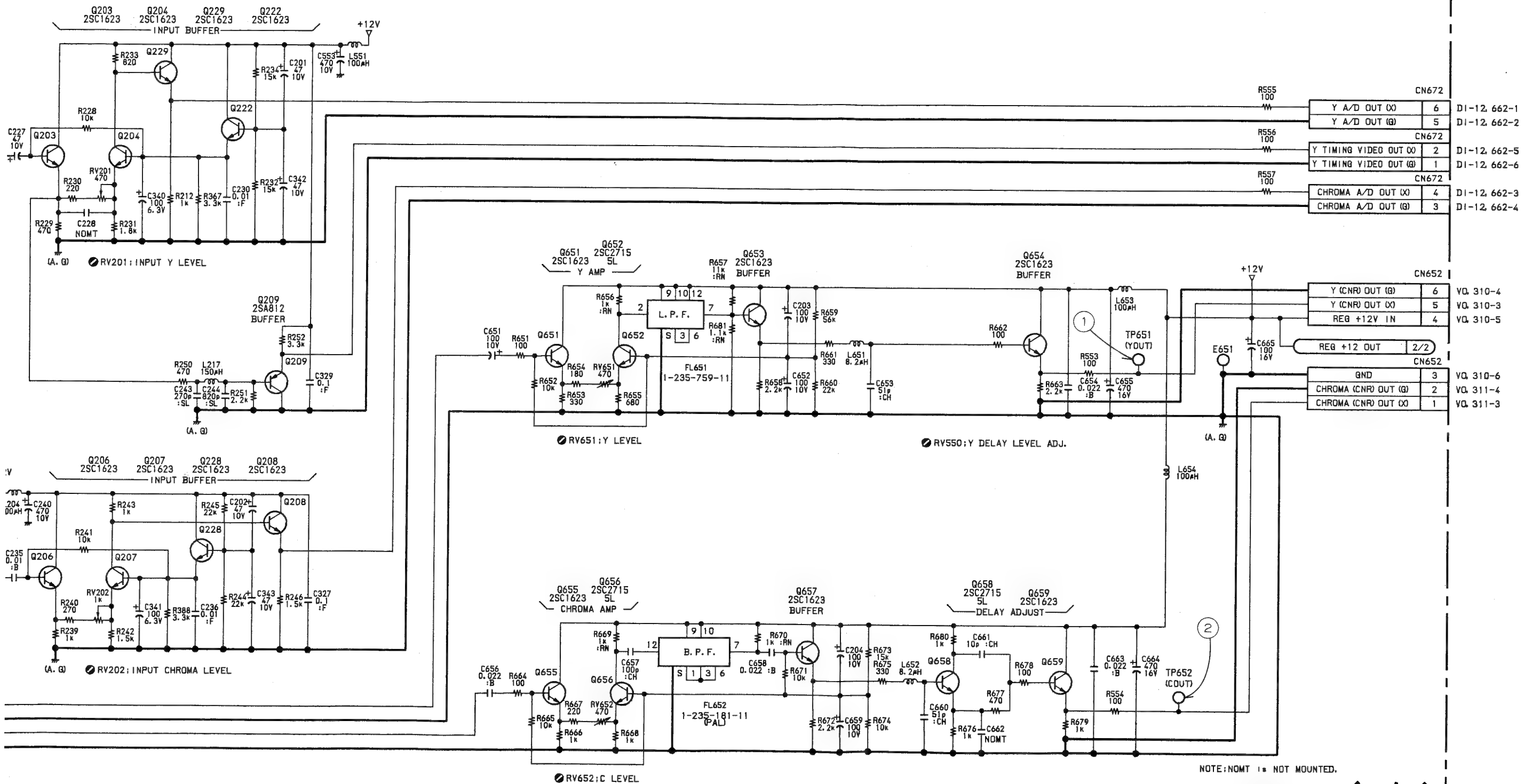
L-4
L-3
L-3
L-3
H-2
H-4
H-4
B-2
A-2





DI-12 B SIDE
 1-635-082-11, 12 (1)
 EVO-9800P

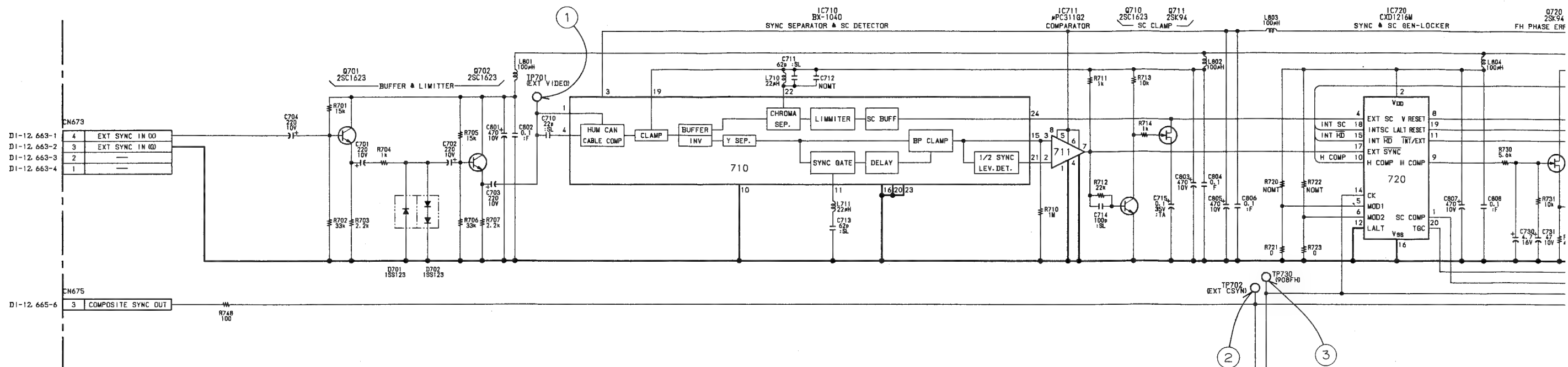
B Side is the same as SOLDER Side



DI-13(1/2)

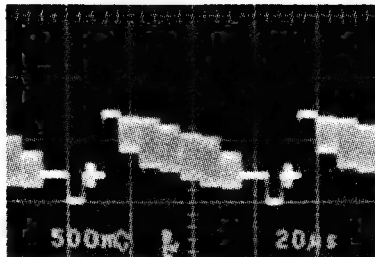
I-635-083-11(1)
EVO-9800P

DI-13 (2/2); EXTERNAL/INTERNAL GENERATOR LOCKER

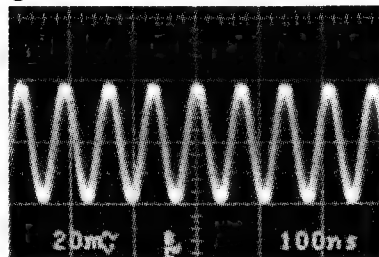


DI-13 (2/2)

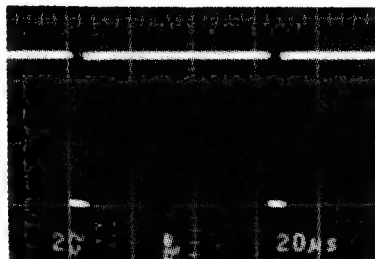
① TP701 EE mode



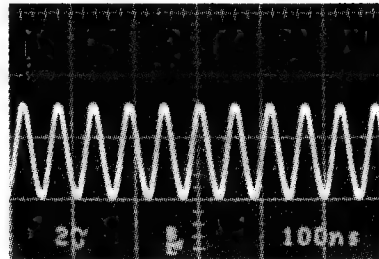
④ TP731 EE mode 14.18MHz



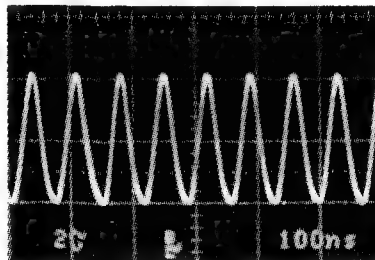
② TP702 EE mode



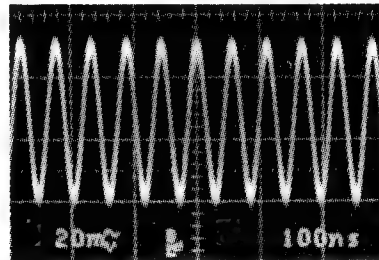
⑤ TP760 EE mode 17.73MHz



③ TP730 EE mode 14.18MHz

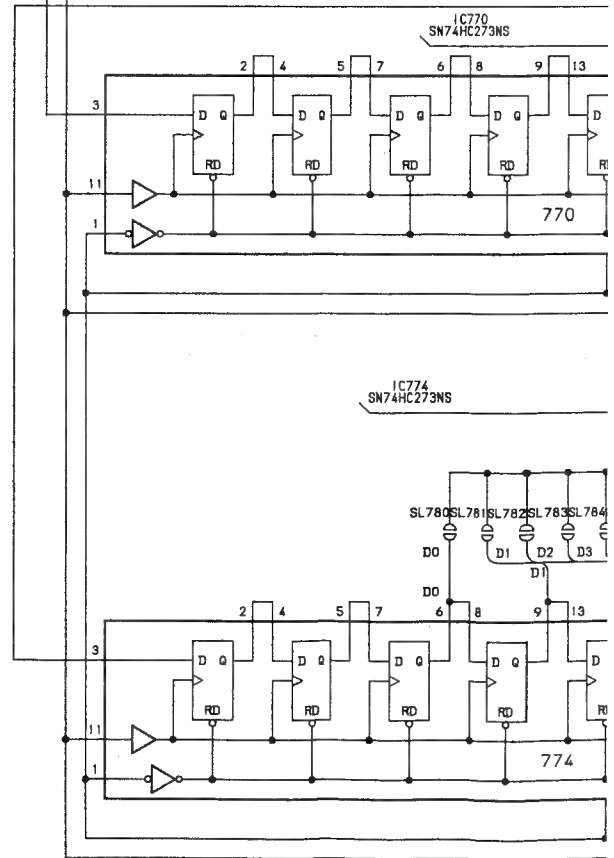


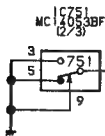
⑥ TP732 EE mode 17.73MHz



Measurement Condition

- Input Signal : Color Bars (SYNC IN)





I-635-083-11(1)
EVO-9800P

NOTE;NOMT 18 NOT MOUNTED.

DI-13; EXTERNAL/INTERNAL GENERATOR LOCKER

DI-13(1-635-083-11) A SIDE

DI-13(1-635-083-11) B SIDE

N651 H-7
CN652 B-7
CN671 A-3
N672 H-2
CN673 F-7
CN674 C-7
CN675 D-7

CV11 F-3
CV21 E-6

551 A-7
E730 F-1
E731 E-7
300 D-7

FL651 B-5
FL652 A-5

710 F-6
IC711 F-2
IC720 E-1
740 E-4
750 D-2
IC751 D-5
IC752 D-4
770 C-4
771 C-3
IC772 C-3
774 C-6
775 C-5
800 B-7

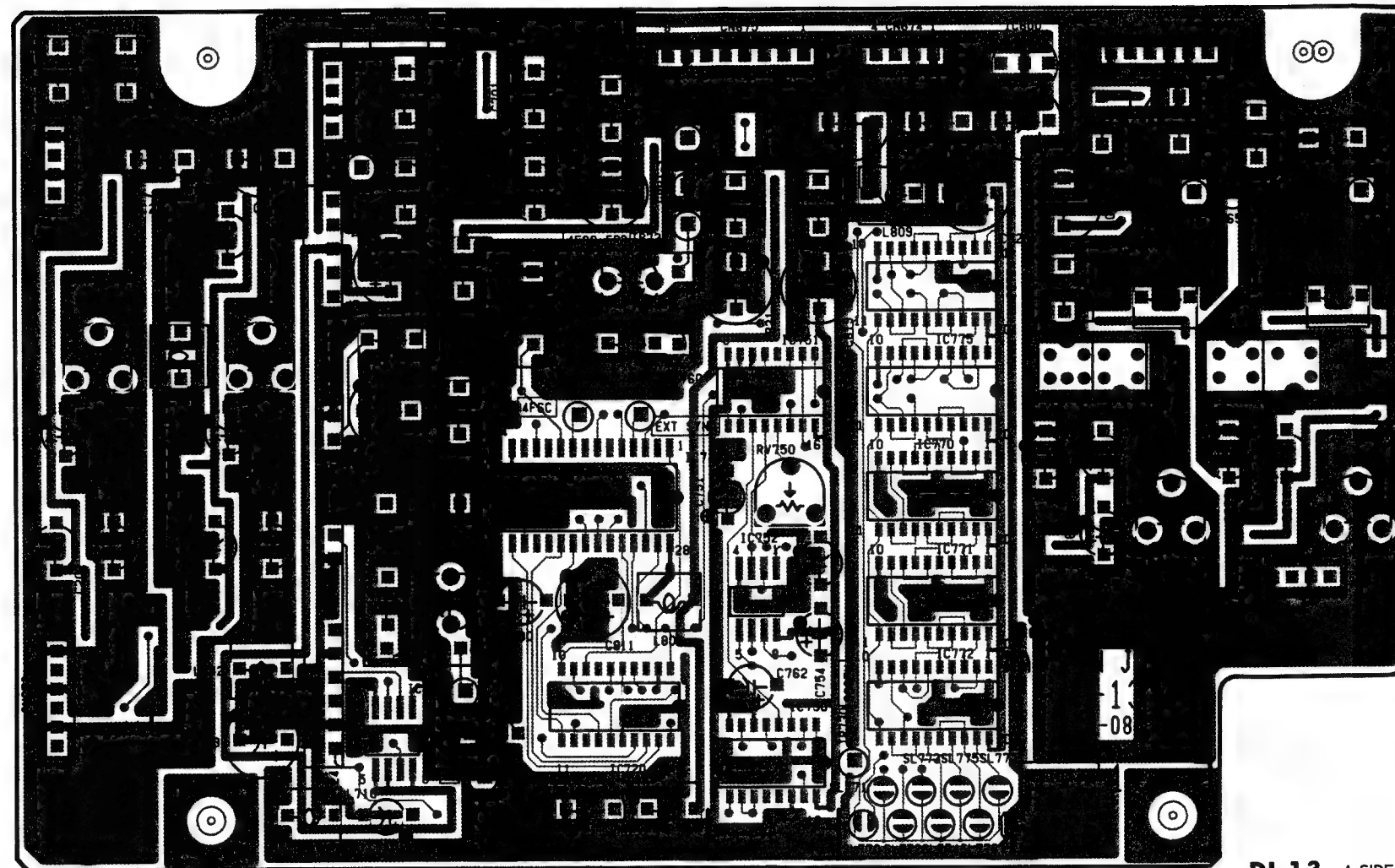
V201 G-5
V202 H-5
KV651 B-3
RV652 A-3
V750 D-4

TP651 B-7
TP652 A-7
P701 F-7
P702 E-5
TP703 C-2
TP731 F-2
P732 E-6
P760 E-5

V11 F-4
21 E-5

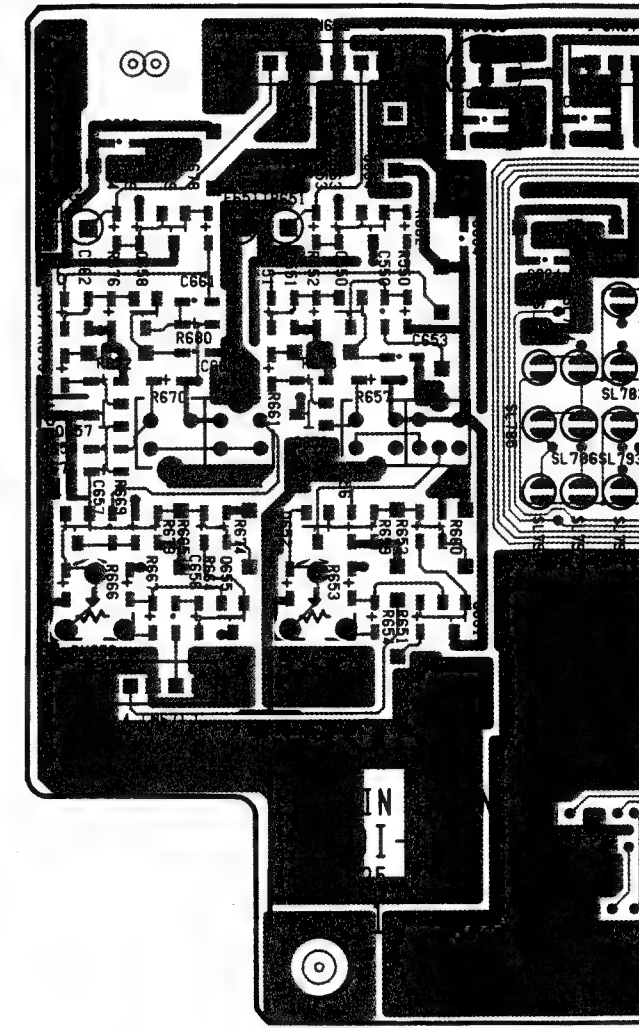
D11 F-4
D21 E-6
D701 E-7
D702 F-7

Q11 F-3
Q12 F-4
Q21 E-6
Q22 F-6
Q203 G-6
Q204 G-4
Q206 H-6
Q207 H-4
Q208 H-3
Q209 G-4
Q222 G-4
Q228 H-4
Q229 G-3
Q550 B-6
Q651 B-4
Q652 B-4
Q653 B-5
Q654 B-7
Q655 A-4
Q656 A-4
Q657 A-5
Q658 A-6
Q659 A-7
Q701 F-7
Q702 F-6
Q710 F-2
Q711 F-1
Q720 E-2

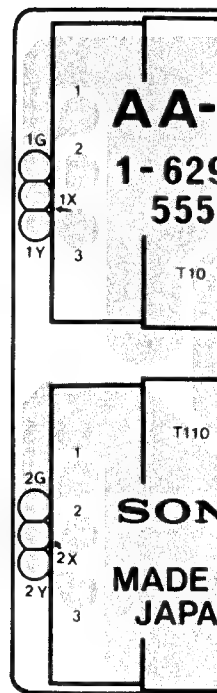
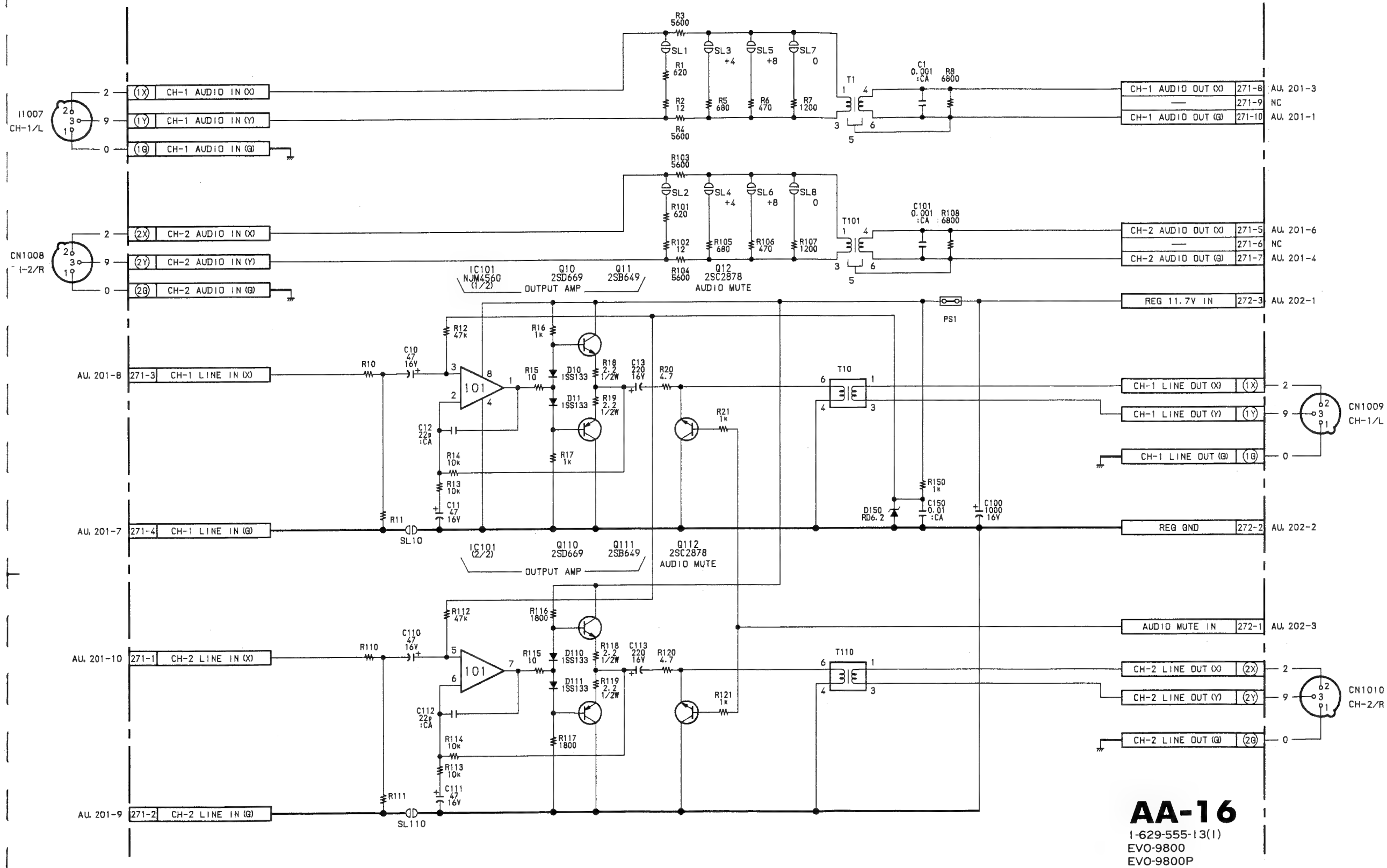


DI-13 —A SIDE—
1-635-083-11(1)
EVO-9800P

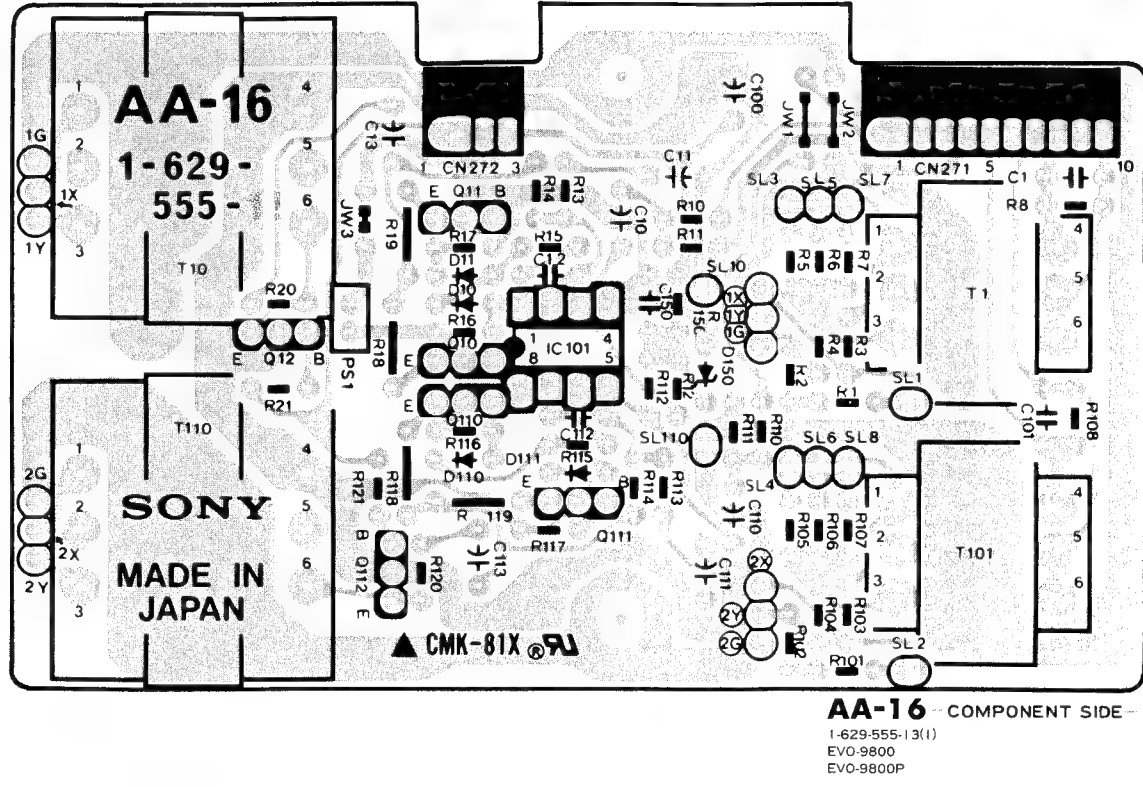
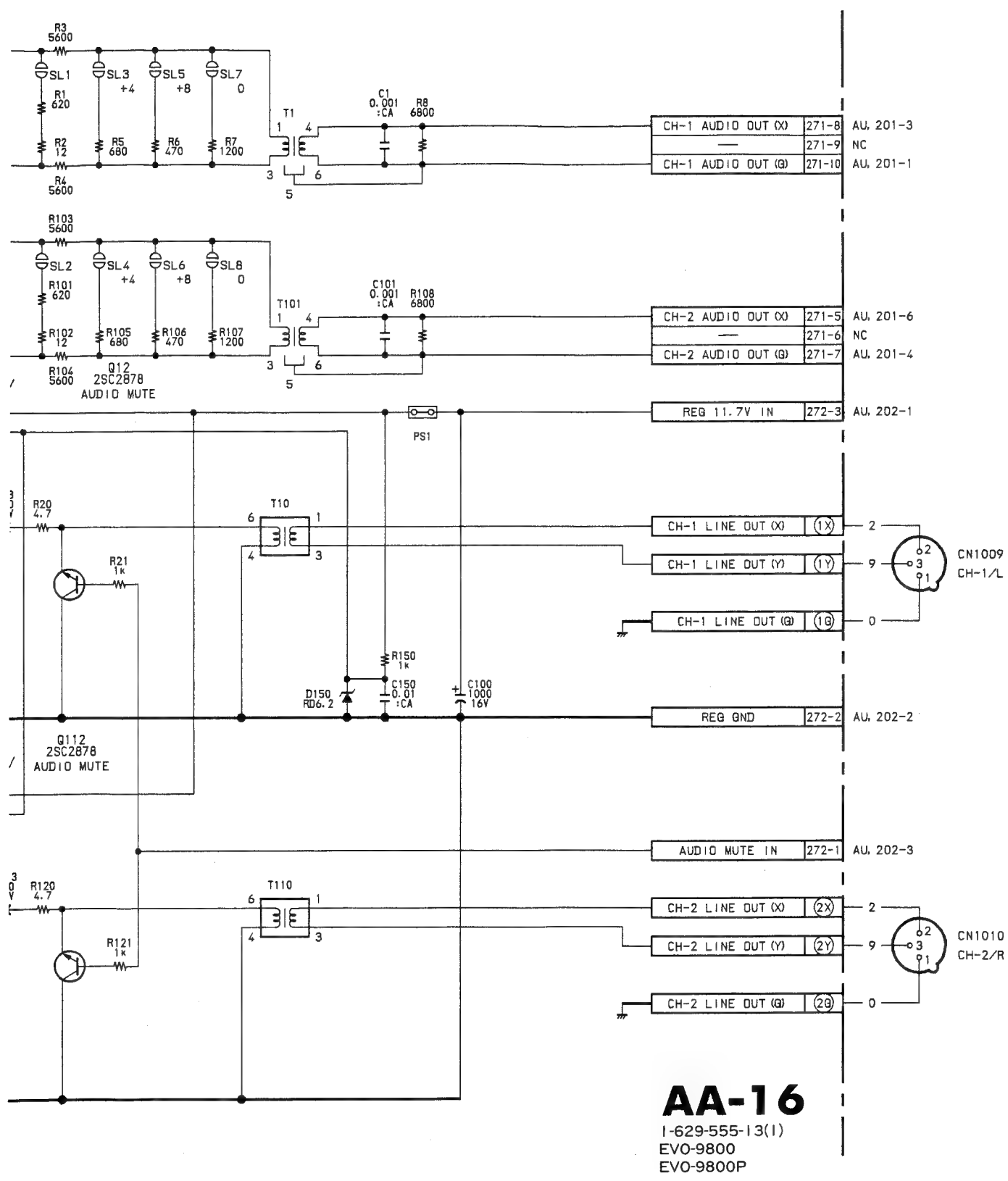
A Side is the same as COMPONENT Side



6 XLR INPUT/OUTPUT AMPLIFIER



AA-16; XLR INPUT/OUTPUT AMPLIFIER

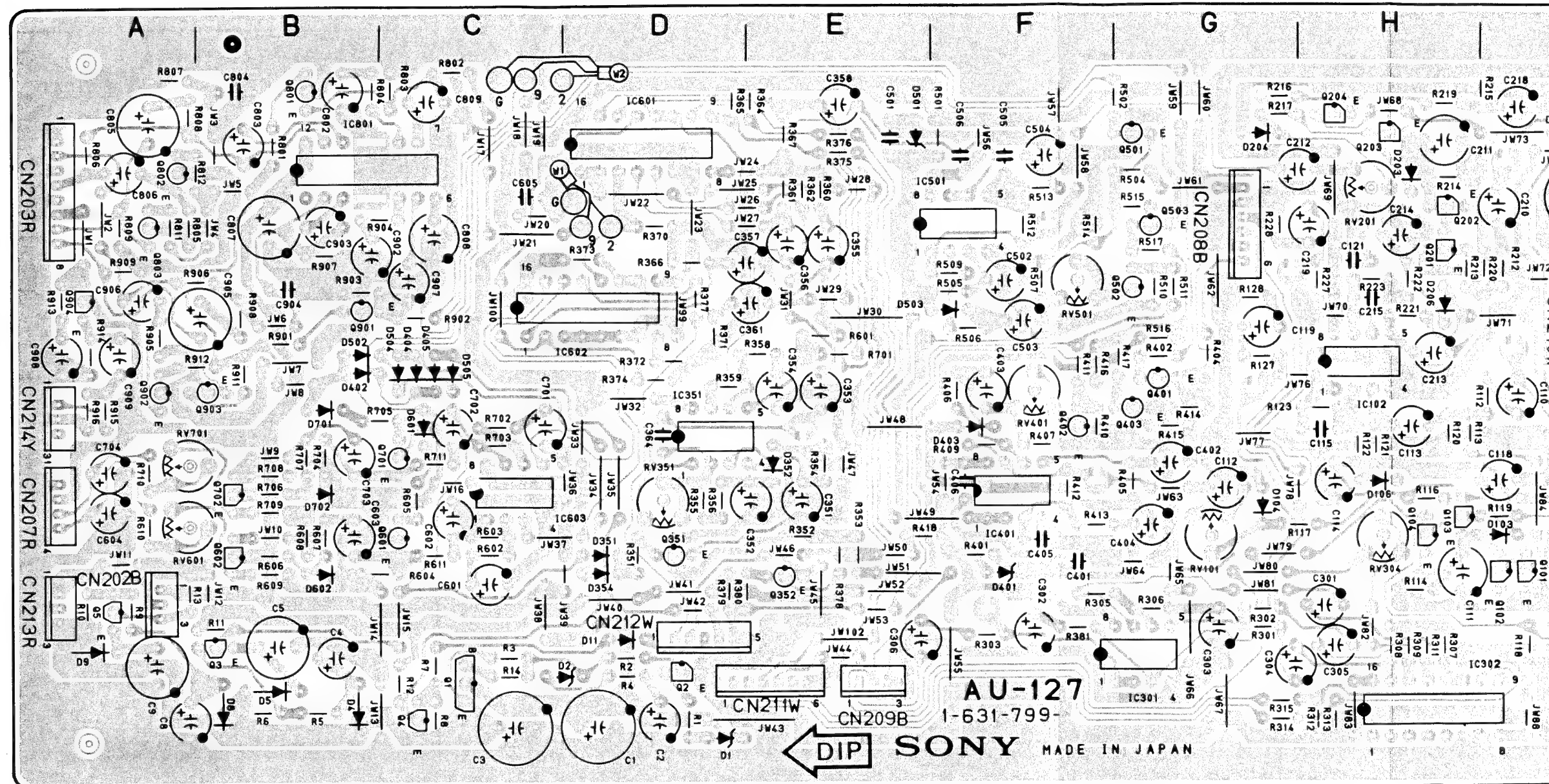


AU-127(1-631-799-12) A SIDE

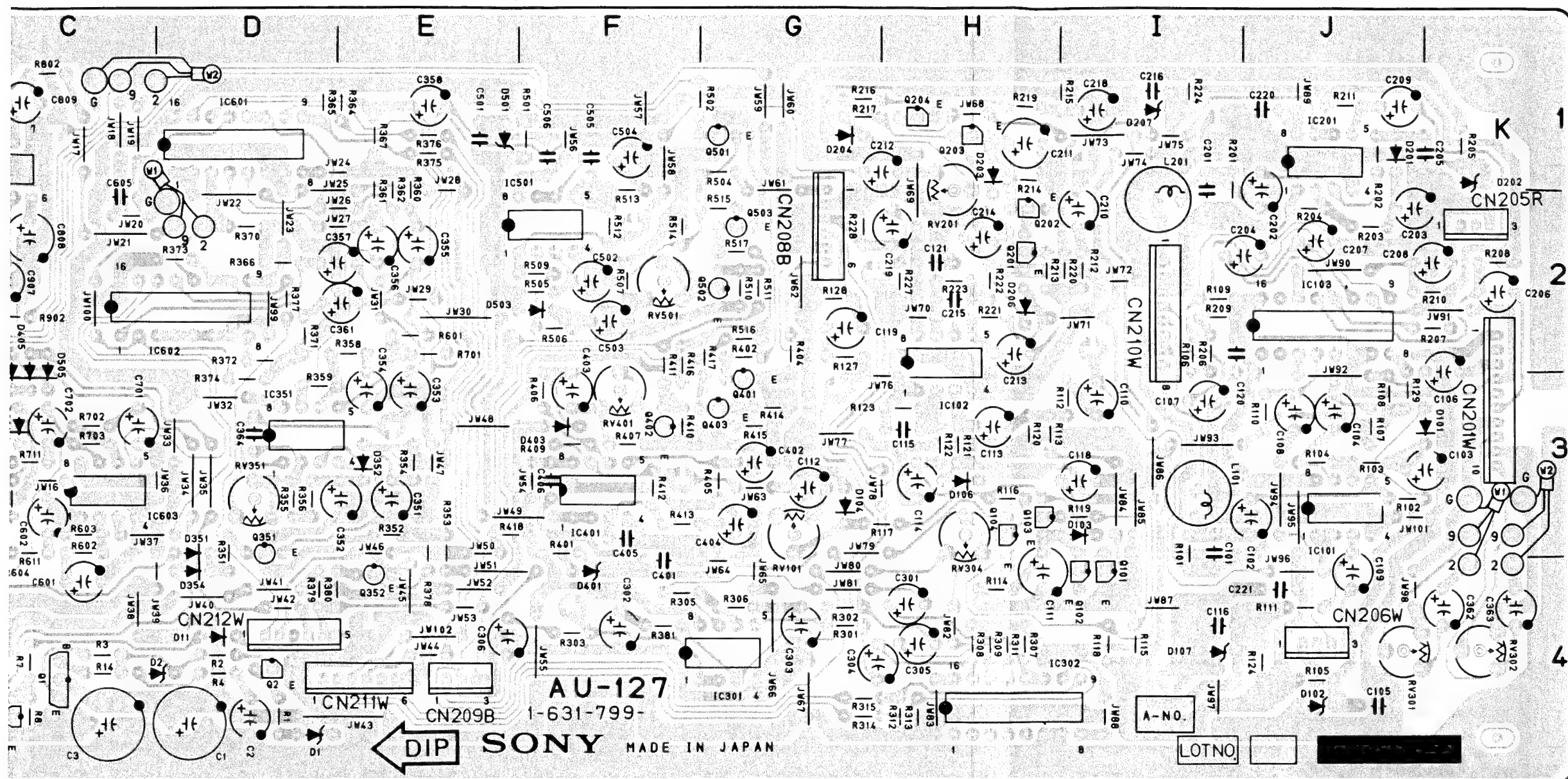
CN201	K-3	IC103	J-2
CN202	A-4	IC201	J-1
CN203	A-1	IC301	G-4
CN205	K-2	IC302	I-4
CN206	J-4	IC351	D-3
CN207	A-3	IC401	F-3
CN208	G-2	IC501	F-1
CN209	E-4	IC601	D-1
CN210	I-2	IC602	D-2
CN211	E-4	IC603	D-3
CN212	D-4	IC801	B-1
CN213	A-4		
CN214	A-3	Q1	C-4
		Q2	D-4
D1	D-4	Q3	B-4
D2	C-4	Q4	C-4
D4	B-4	Q5	A-4
D5	B-4	Q101	I-4
D8	B-4	Q102	I-4
D9	A-4	Q103	H-3
D11	D-4	Q104	H-3
D101	K-3	Q201	H-2
D102	J-4	Q202	H-2
D103	I-3	Q203	H-1
D104	G-3	Q204	H-1
D106	H-3	Q351	D-3
D107	I-4	Q352	E-4
D201	J-1	Q401	G-3
D202	K-1	Q402	F-3
D203	H-1	Q403	G-3
D204	G-1	Q501	G-1
D206	H-2	Q502	G-2
D207	I-1	Q503	G-2
D351	D-3	Q601	C-3
D352	E-3	Q602	B-3
D354	D-4	Q701	C-3
D401	F-4	Q702	B-3
D402	B-3	Q801	B-1
D403	F-3	Q802	A-1
D404	C-2	Q803	A-2
D405	C-2	Q901	B-2
D501	E-1	Q902	A-3
D502	B-2	Q903	B-3
D503	E-2	Q904	A-2
D504	C-2		
D505	C-2	RV101	G-4
D601	C-3	RV201	H-2
D602	B-4	RV301	J-4
D701	B-3	RV302	K-4
D702	B-3	RV351	D-3
		RV401	F-3
E1	C-1S	RV501	F-2
E2	E-4S	RV601	A-4
E3	J-1S	RV701	A-3
E4	I-4S		
		TP101	I-2S
IC101	J-3	TP102	G-3S
IC102	H-3	TP201	I-1S

TP202 G-2S
TP301 F-4S
TP351 E-3S
TP401 F-3S
TP501 F-2S

S: B SIDE
(SOLDERING SIDE)



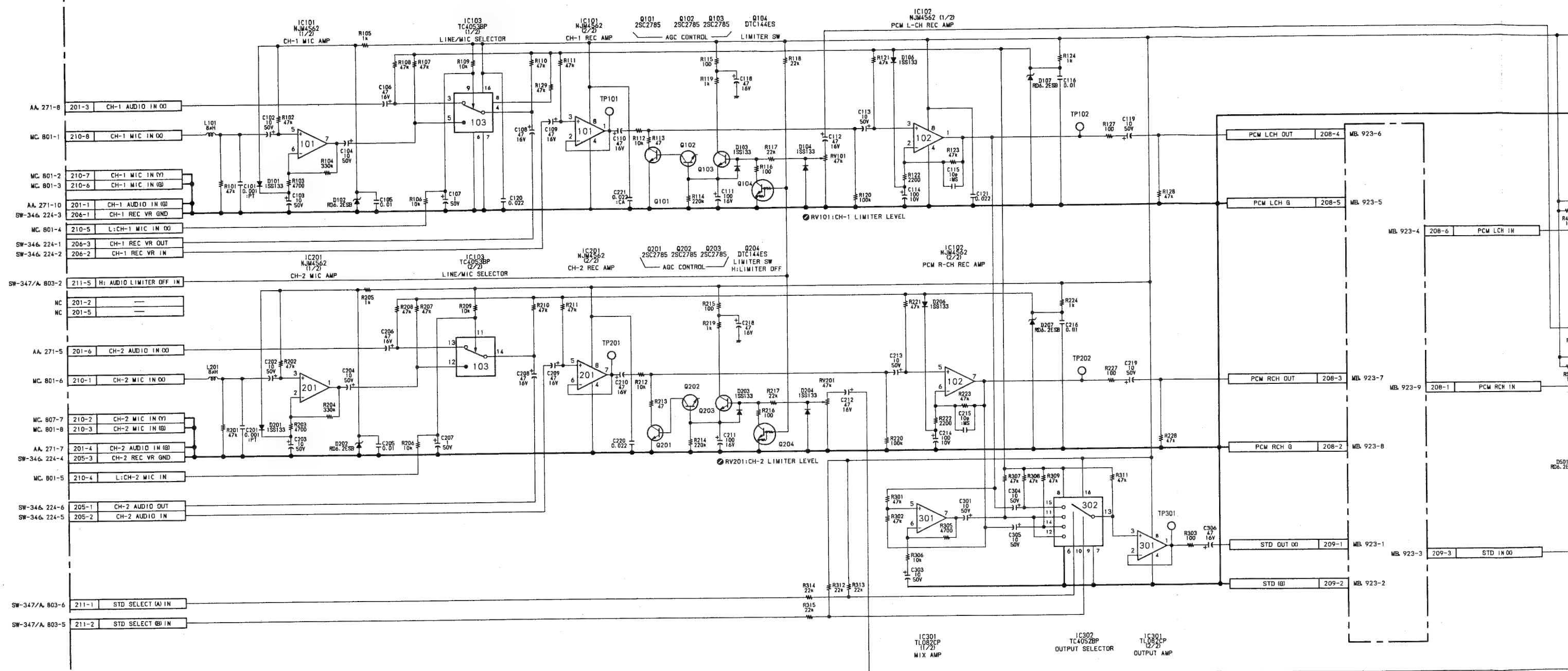
A Side

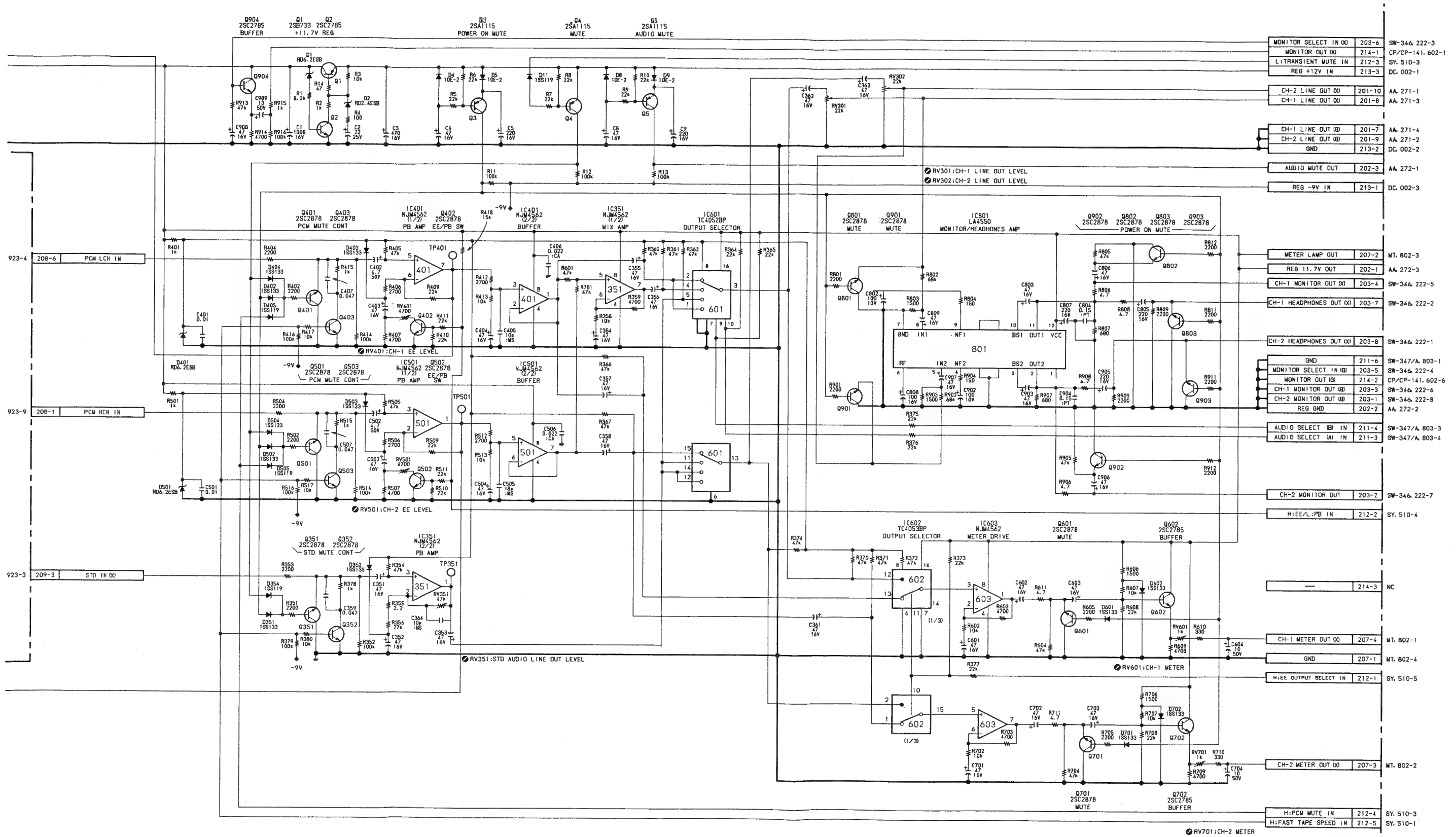


AU-127 — A SIDE —
1-631-799-12(1)
EVO-9800
EVO-9800P

A Side is the same as COMPONENT Side

AU-127; AUDIO REC/PB AMPLIFIER



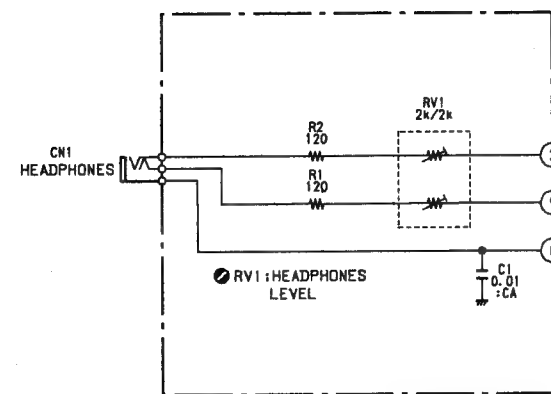


AU-127

I-631-799-12(1)
EVO-9800
EVO-9800P

HP-42; HEADPH
SW-346; AUDIO
MC-28; MICROP
MT-57; AUDIO L

H 42; HEADPHONES LEVEL CONTROL
S 346; AUDIO LEVEL CONTROL
MC-28; MICROPHONES JACK
M 57; AUDIO LEVEL METER



HP-42

I-629-477-12(1)
EVO-9800
EVO-9800P

AU-127, 203-7
AU-127, 203-8

222-2 CH-1 HEADPHONES IN (O)
222-1 CH-2 HEADPHONES IN (O)

AU-127, 203-6
AU-127, 203-5

AU-127, 203-4
AU-127, 203-3
AU-127, 203-2
AU-127, 203-1

221-3 CH-1 AUDIO HEADPHONES (O)
221-2 CH-2 AUDIO HEADPHONES (O)
221-1 AUDIO HEADPHONES (O)

222-3 MONITOR SELECT OUT (O)
222-4 MONITOR SELECT OUT (O)

222-5 CH-1 MONITOR IN (O)
222-6 CH-1 MONITOR IN (O)
222-7 CH-2 MONITOR IN (O)
222-8 CH-2 MONITOR IN (O)

R1 22k

R2 22k

S1002
1-516-963-21
MONITOR OUT

CH-1

MIX

CH-2

CH-1 REC VR IN 224-1 AU-127, 206-3
CH-1 REC VR OUT 224-2 AU-127, 206-2
CH-1 REC VR GND 224-3 AU-127, 206-1

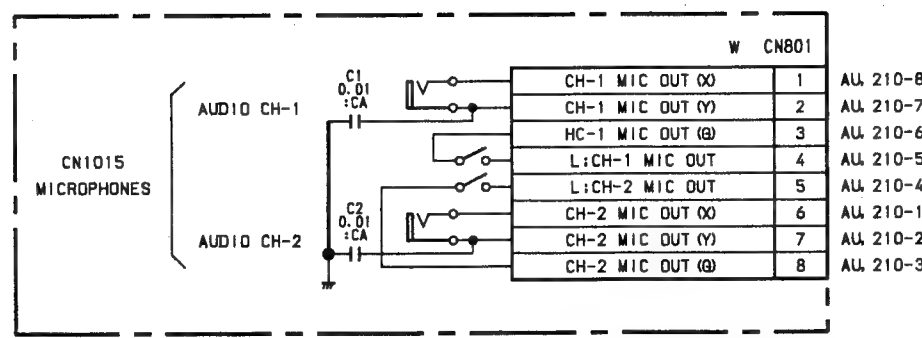
RV1:CH-1 REC LEVEL

CH-2 REC VR GND 224-4 AU-127, 205-3
CH-2 REC VR OUT 224-5 AU-127, 205-2
CH-2 REC VR IN 224-6 AU-127, 205-1

RV2:CH-2 REC LEVEL

SW-346

I-631-793-11(1)
EVO-9800
EVO-9800P

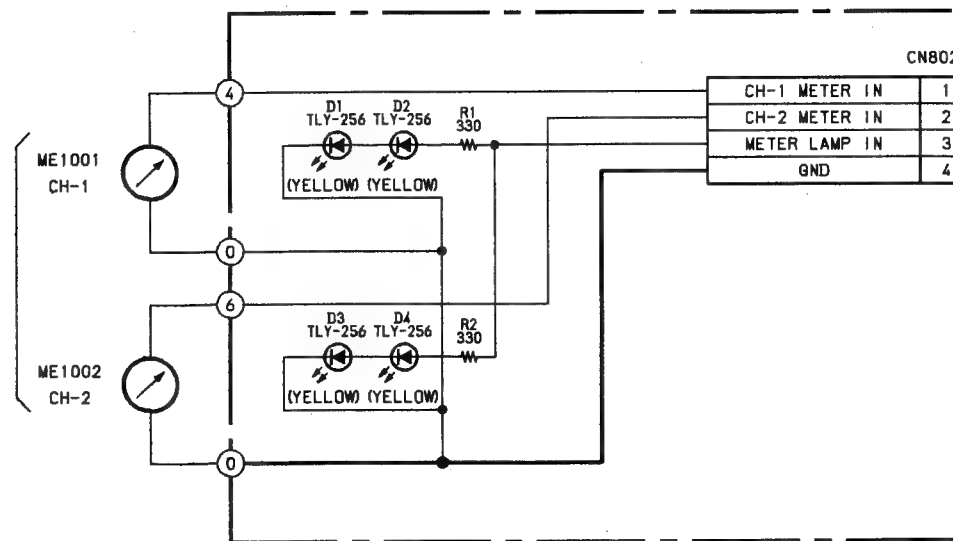


MC-28

I-622-222-11(1)
EVO-9800
EVO-9800P

AU 210-8
AU 210-7
AU 210-6
AU 210-5
AU 210-4
AU 210-1
AU 210-2
AU 210-3

AUDIO LEVEL



MT-57

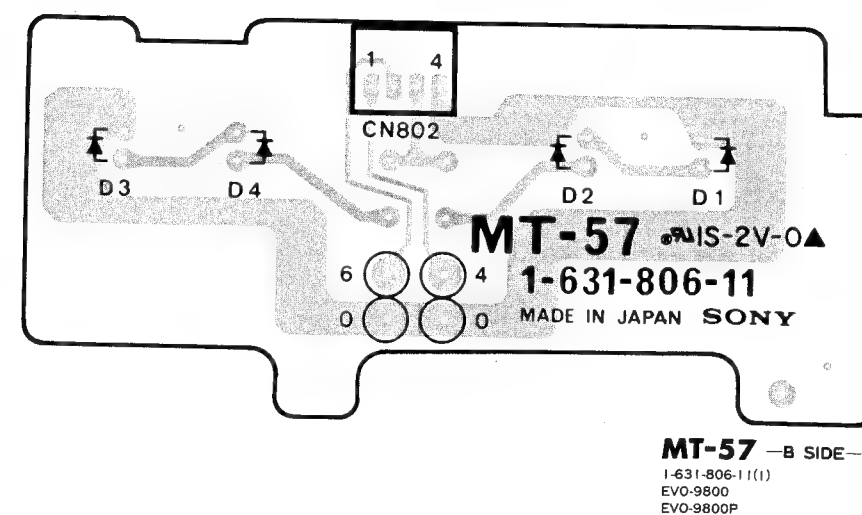
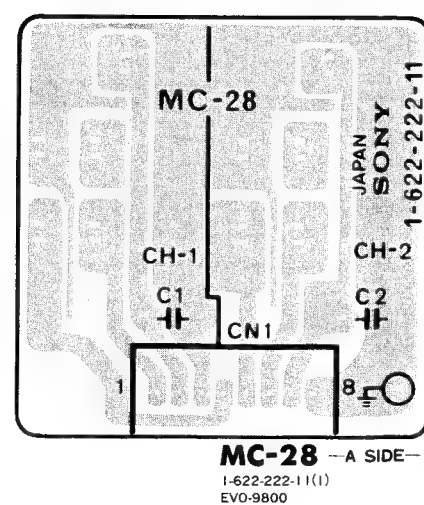
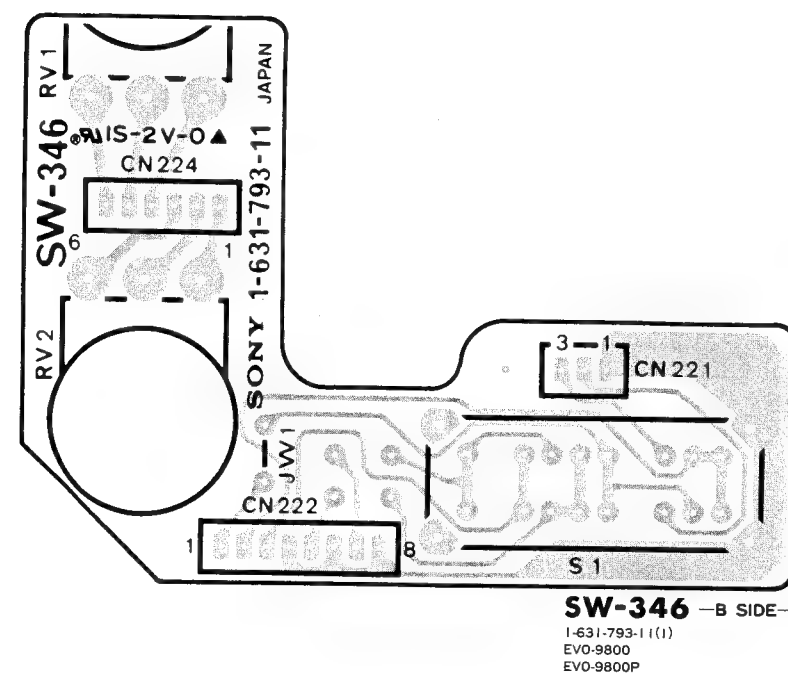
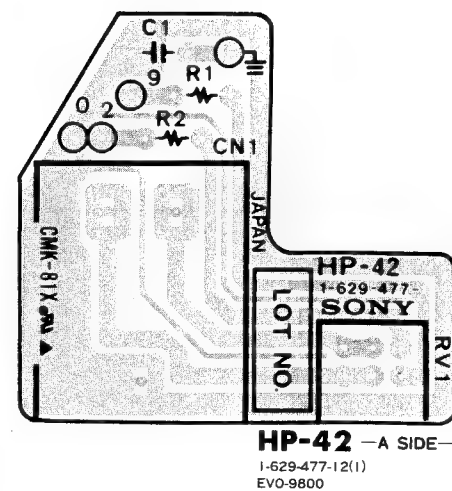
I-631-806-11(1)
EVO-9800
EVO-9800P

CH-1 METER IN 1 AU 207-4
CH-2 METER IN 2 AU 207-3
METER LAMP IN 3 AU 207-2
GND 4 AU 207-1

HP-42; HEADPHONES LEVEL CONTROL
 SW-346; AUDIO LEVEL CONTROL
 MC-28; MICROPHONES JACK
 MT-57; AUDIO LEVEL METER

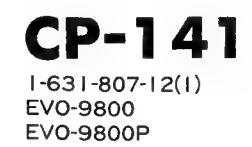
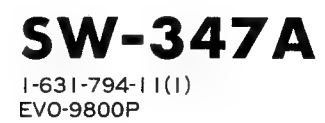
HP-42, MC-28, MT-57, SW-346

HP-42, MC-28, MT-57, SW-346

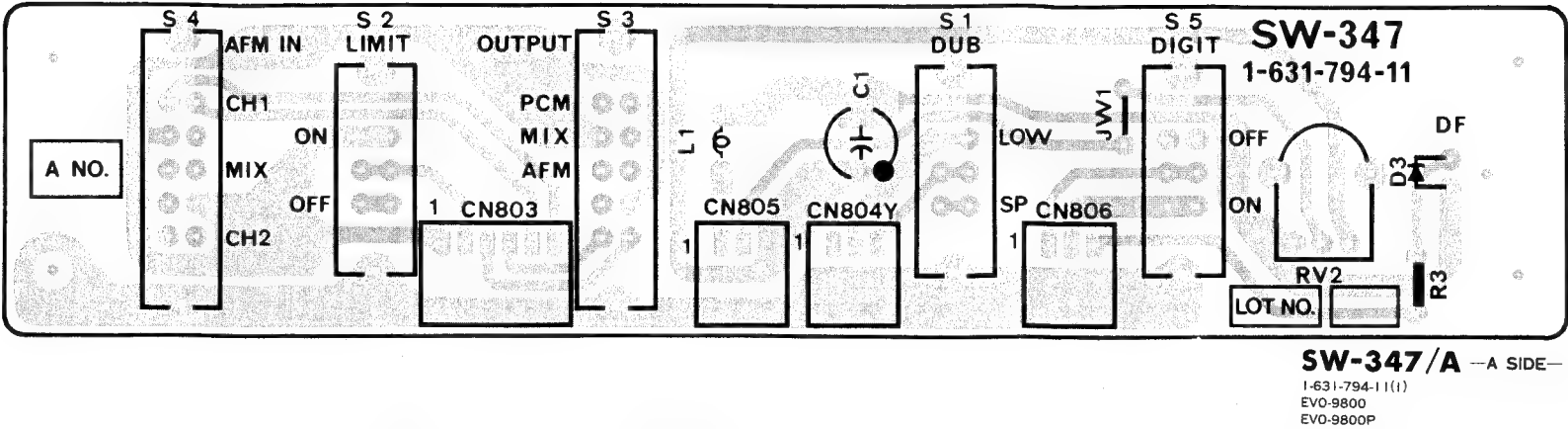


A Side is the same as COMPONENT Side

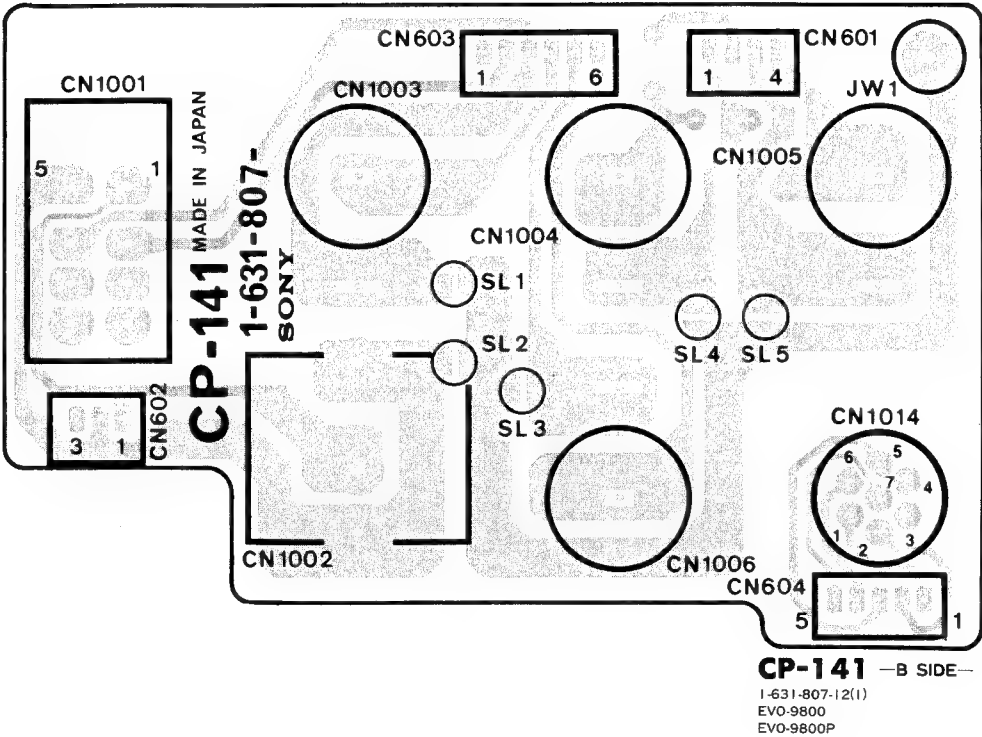
B Side is the same as SOLDER Side



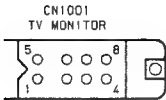
SW-347A; AUDIO SELECT SWITCH
CP-141; CONNECTOR PANEL



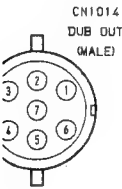
A Side is the same as COMPONENT Side

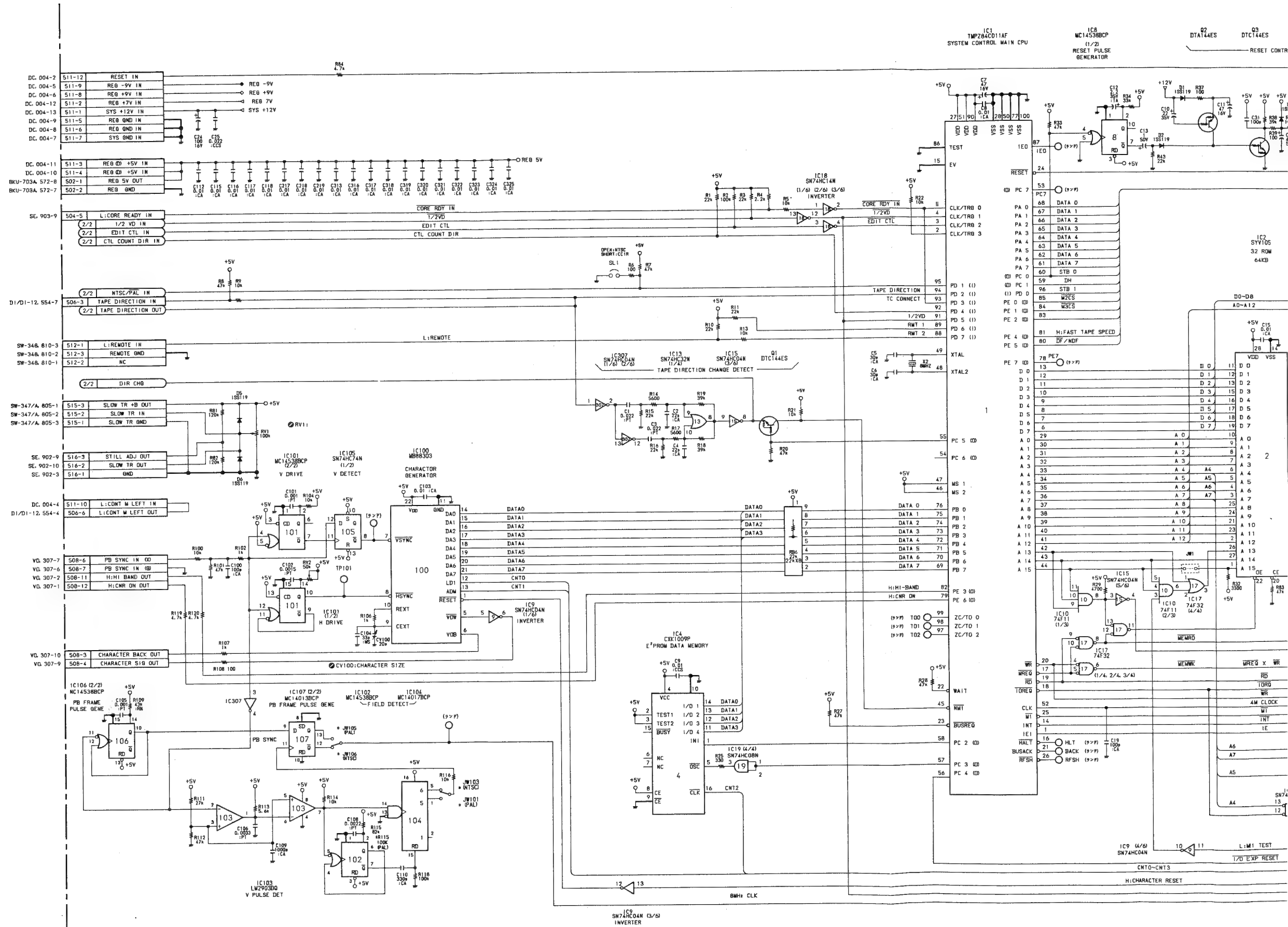


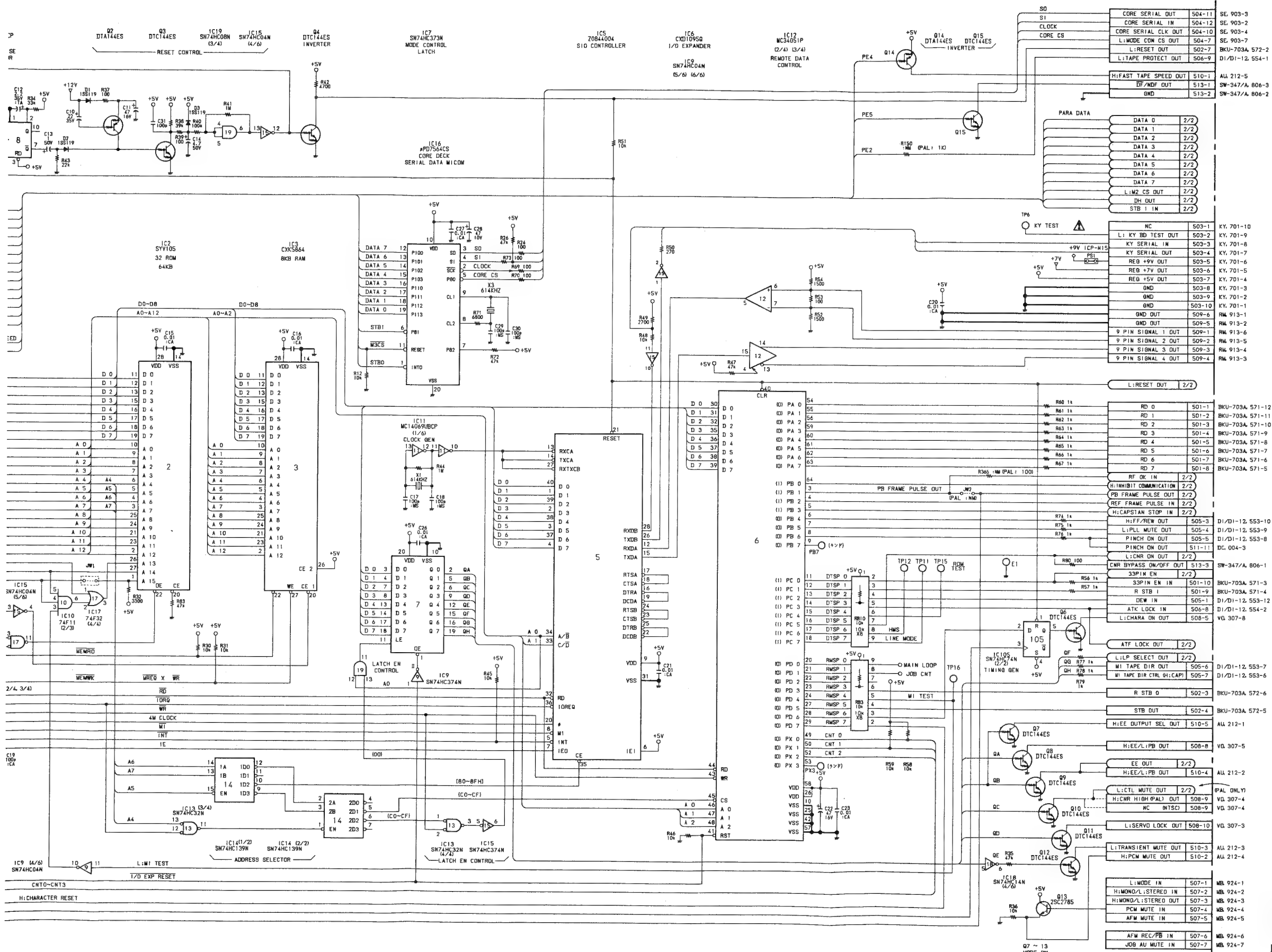
B Side is the same as SOLDER Side



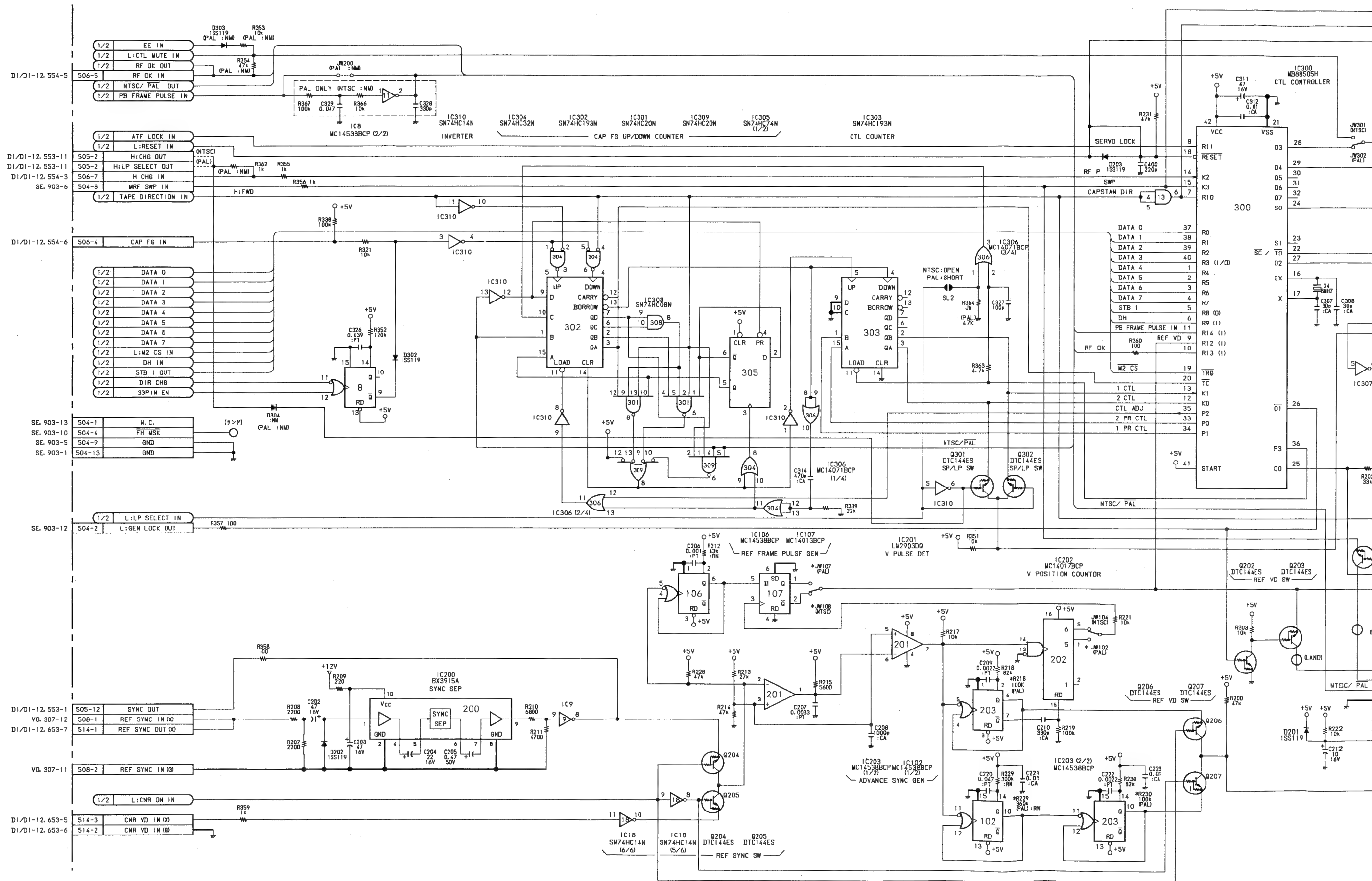
ITOR

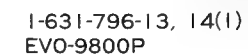






FY-145A (2/2); CTL CONTROL

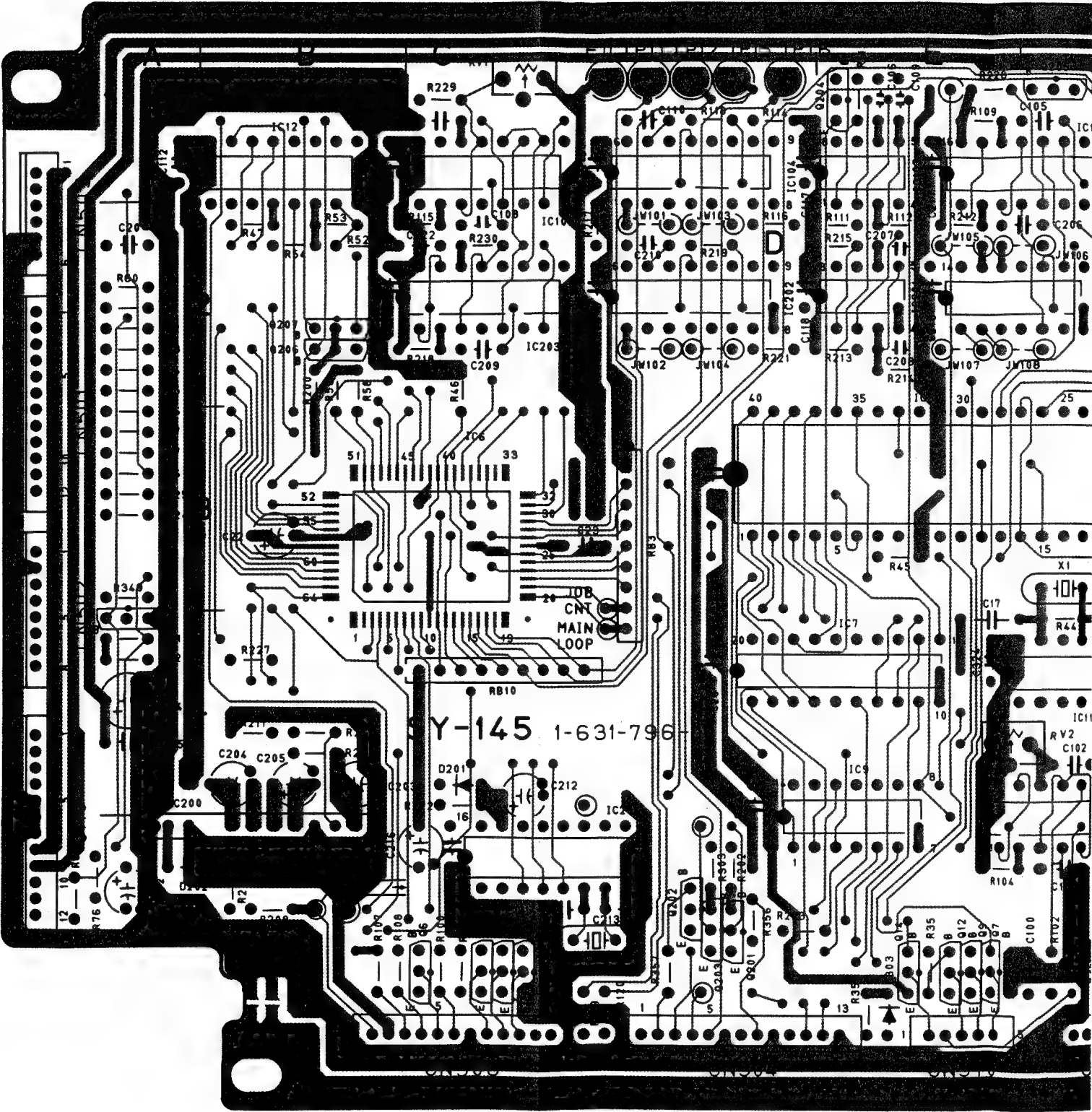


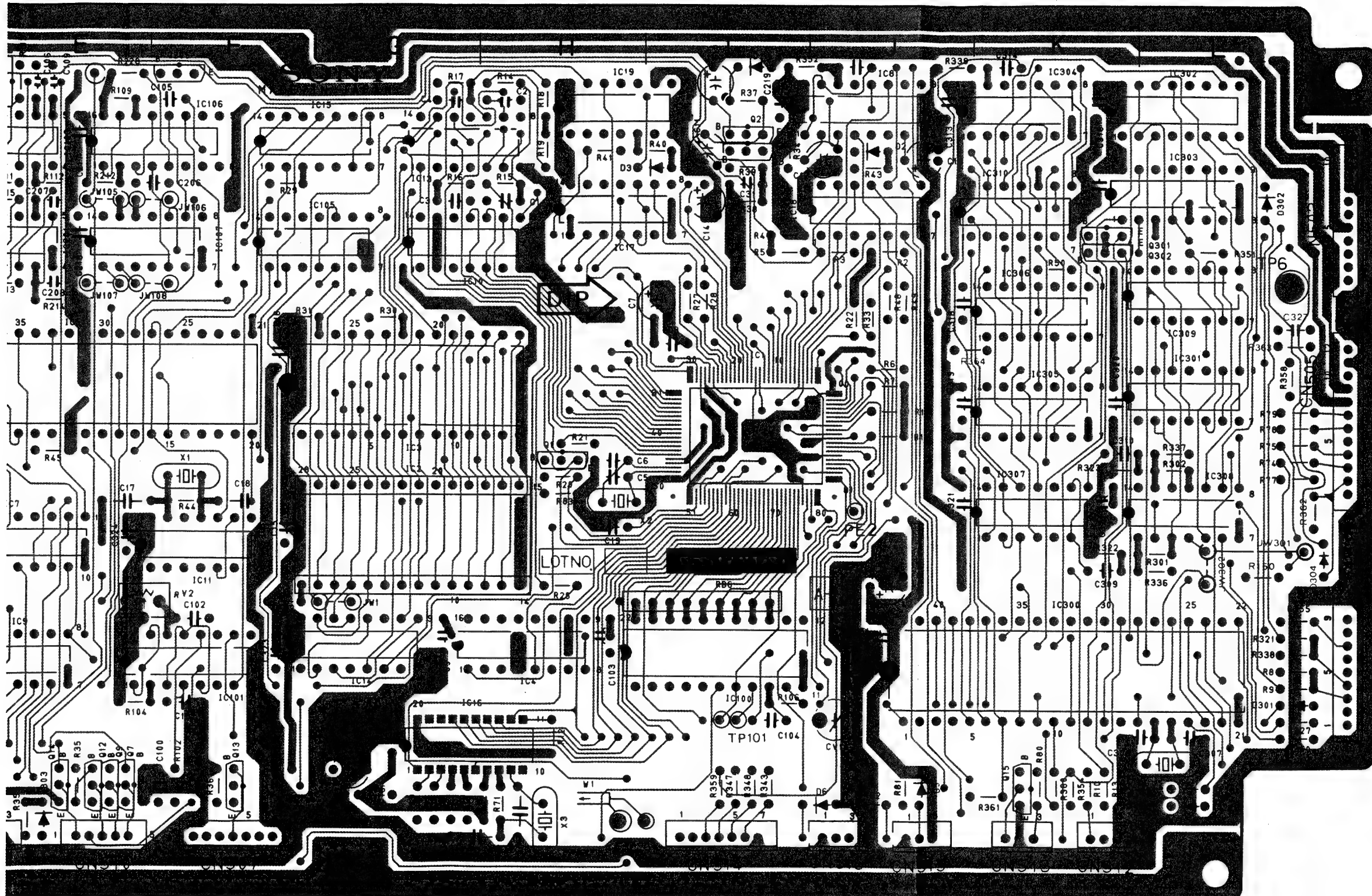


SY-145A; SYSTEM CONTROL

SY-145A(1-631-796-13, 14) A SIDE

CN12	G-3	IC106	F-1	X1	F-3
CN501	A-3	IC107	F-2	X2	H-4
CN502	A-3	IC200	A-4	X3	H-5
CN503	L-2	IC201	E-2	X4	L-5
CN504	D-5	IC202	D-2	X5	C-5
CN505	L-3	IC203	C-2		
CN506	L-4	IC204	D-4		
CN507	F-5	IC300	K-4		
CN508	C-5	IC301	L-3		
CN509	A-2	IC302	L-1		
CN510	E-5	IC303	L-1		
CN511	A-4	IC304	K-1		
CN512	K-5	IC305	K-3		
CN513	K-5	IC306	K-2		
CN514	I-5	IC307	K-3		
CN515	J-5	IC308	L-3		
CN516	J-5	IC309	L-3		
		IC310	K-2		
CV100	J-5				
		PS1	L-1		
D1	I-1				
D2	J-1	Q1	H-3		
D3	H-2	Q2	I-1		
D5	J-5	Q3	I-1		
D6	J-5	Q4	A-4		
D201	C-4	Q6	C-5		
D202	A-5	Q7	E-5		
D203	L-5	Q8	C-5		
D301	L-5	Q9	E-5		
D302	L-2	Q10	C-5		
		Q11	C-5		
E1	C-1	Q12	E-5		
		Q13	F-5		
IC1	I-3	Q14	E-5		
IC2	G-3	Q15	K-5		
IC3	G-3	Q201	D-5		
IC4	H-5	Q202	D-5		
IC5	E-2	Q203	D-5		
IC6	C-3	Q204	E-1		
IC7	E-4	Q205	F-1		
IC8	J-1	Q206	B-2		
IC9	E-4	Q207	B-2		
IC10	G-2	Q301	L-2		
IC11	F-4	Q302	L-2		
IC12	B-1				
IC13	G-2	RB3	D-3		
IC14	G-5	RB6	I-4		
IC15	G-1	RB10	C-4		
IC16	G-5				
IC17	H-2	RV1	C-1		
IC18	I-2	RV2	F-4		
IC19	H-1				
IC100	I-5	TP6	L-2		
IC101	F-5	TP11	D-1		
IC102	C-2	TP12	D-1		
IC103	E-1	TP15	D-1		
IC104	D-1	TP16	D-1		
IC105	G-2	TP101	I-5		





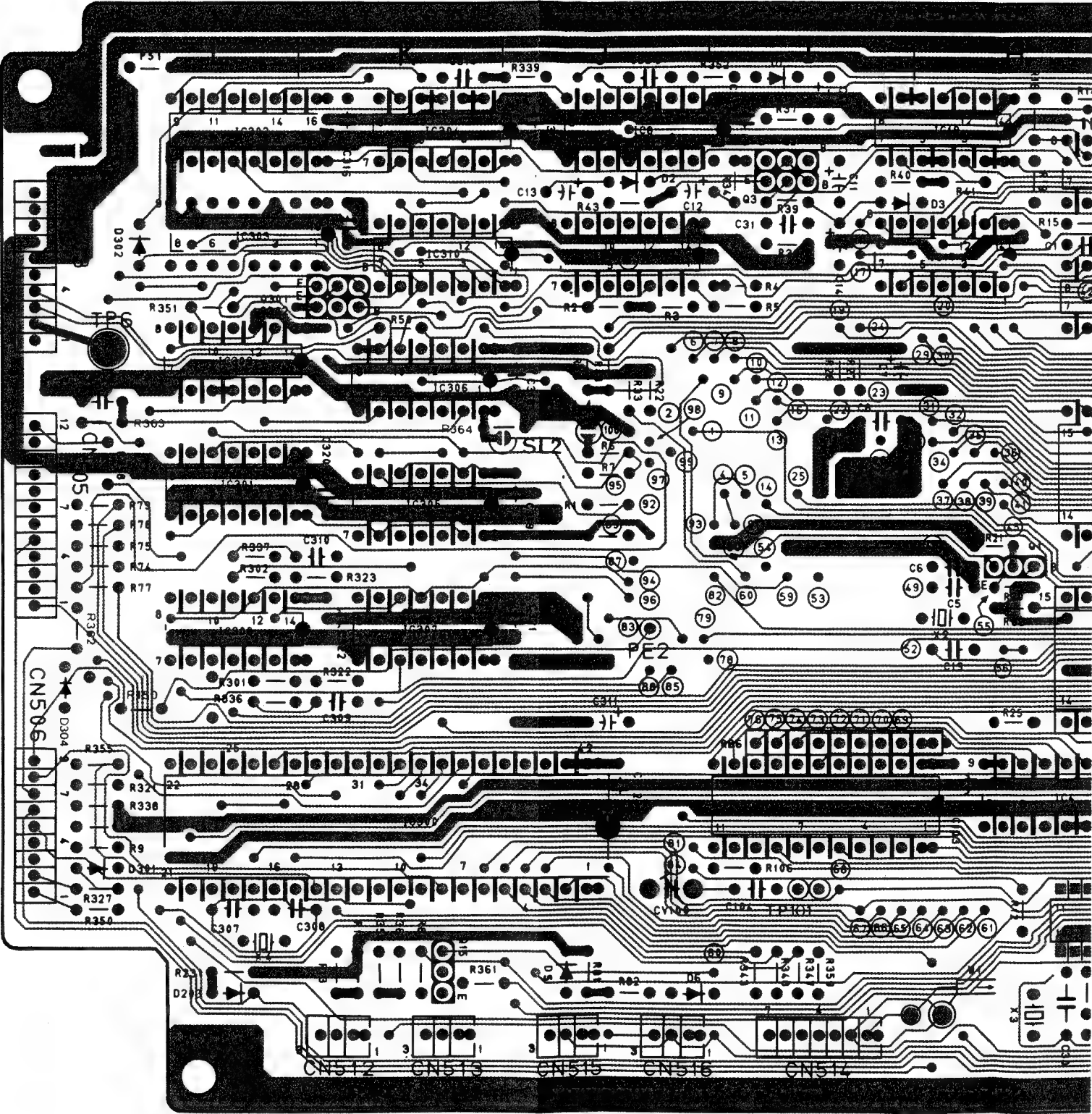
SY-145/A - A SIDE
1-631-796-13, 14(1)
EVO-9800P
EVO-9800P

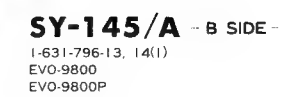
A Side is the same as COMPONENT Side

SY-145A; SYSTEM CONTROL

SY-145A(1-631-796-13, 14) B SIDE

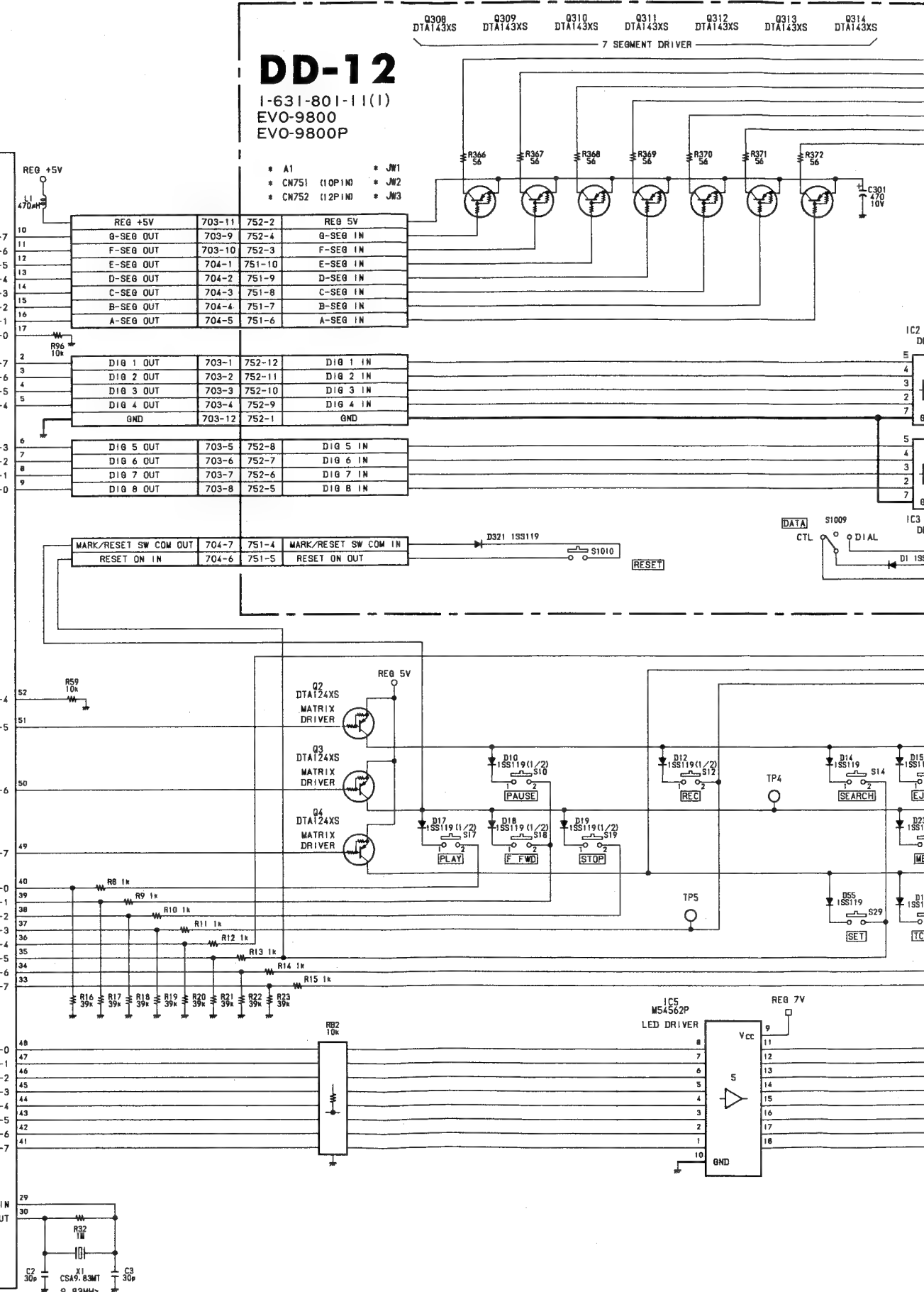
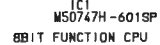
CN12	G-3	IC106	F-1	X1	F-3
CN501	A-3	IC107	F-2	X2	H-4
CN502	A-3	IC200	A-4	X3	H-5
CN503	L-2	IC201	E-2	X4	L-5
CN504	D-5	IC202	D-2	X5	C-5
CN505	L-3	IC203	C-2		
CN506	L-4	IC204	D-4		
CN507	F-5	IC300	K-4		
CN508	C-5	IC301	L-3		
CN509	A-2	IC302	L-1		
CN510	E-5	IC303	L-1		
CN511	A-4	IC304	K-1		
CN512	K-5	IC305	K-3		
CN513	K-5	IC306	K-2		
CN514	I-5	IC307	K-3		
CN515	J-5	IC308	L-3		
CN516	J-5	IC309	L-3		
		IC310	K-2		
CV100	J-5				
		PS1	L-1		
D1	I-1				
D2	J-1	Q1	H-3		
D3	H-2	Q2	I-1		
D5	J-5	Q3	I-1		
D6	J-5	Q4	A-4		
D201	C-4	Q6	C-5		
D202	A-5	Q7	E-5		
D203	L-5	Q8	C-5		
D301	L-5	Q9	E-5		
D302	L-2	Q10	C-5		
		Q11	C-5		
E1	C-1	Q12	E-5		
		Q13	F-5		
IC1	I-3	Q14	E-5		
IC2	G-3	Q15	K-5		
IC3	G-3	Q201	D-5		
IC4	H-5	Q202	D-5		
IC5	E-2	Q203	D-5		
IC6	C-3	Q204	E-1		
IC7	E-4	Q205	F-1		
IC8	J-1	Q206	B-2		
IC9	E-4	Q207	B-2		
IC10	G-2	Q301	L-2		
IC11	F-4	Q302	L-2		
IC12	B-1				
IC13	G-2	RB3	D-3		
IC14	G-5	RB6	I-4		
IC15	G-1	RB10	C-4		
IC16	G-5				
IC17	H-2	RV1	C-1		
IC18	I-2	RV2	F-4		
IC19	H-1				
IC100	I-5	TP6	L-2		
IC101	F-5	TP11	D-1		
IC102	C-2	TP12	D-1		
IC103	E-1	TP15	D-1		
IC104	D-1	TP16	D-1		
IC105	G-2	TP101	I-5		

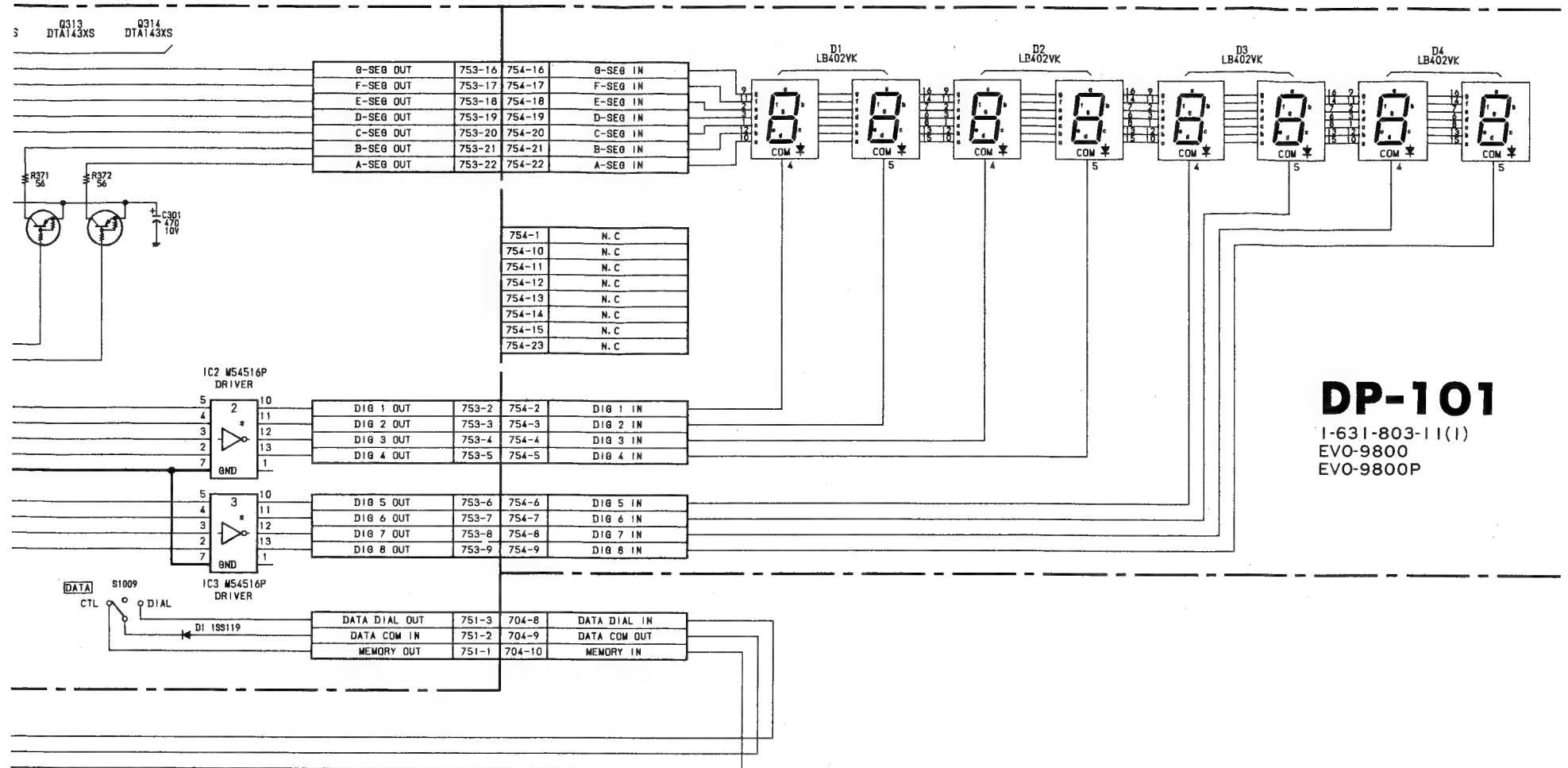




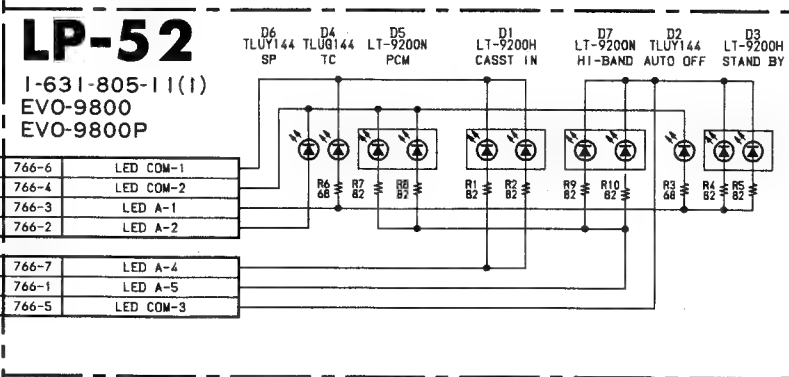
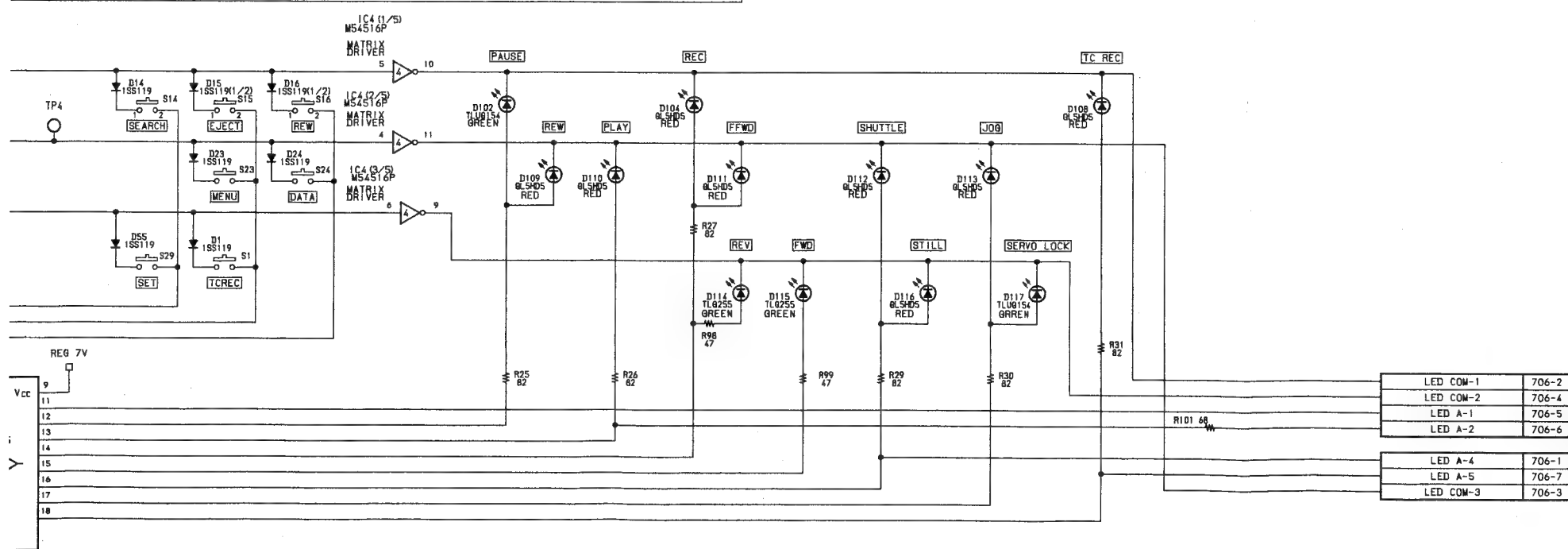
13-55

E1 E2





NOTE:
The Δ -marked components are critical to safety.
Replace only with same components as specified.

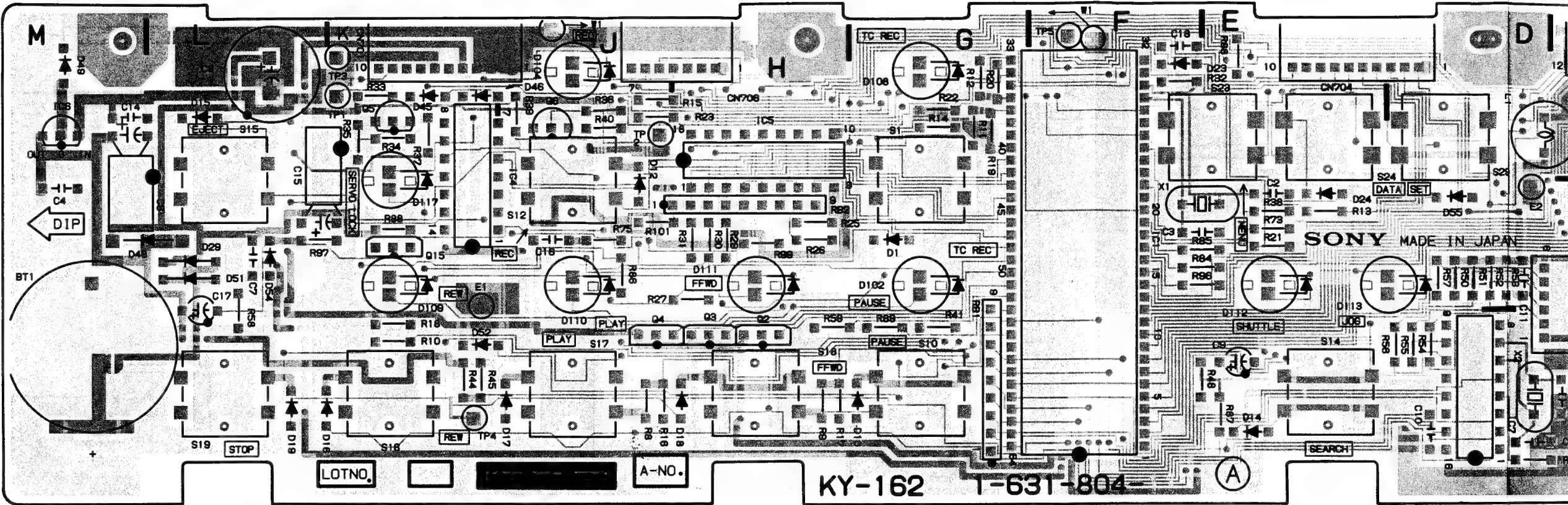


REF NO	TYPE	QND	+SV	PACKAGE
IC1	M50747-601SP	32	1	14PIN DIP
IC2	M54516P	7		14PIN DIP
IC3	M54516P	7		14PIN DIP
IC4	M54516P	7		14PIN DIP
IC5	M54562P	10		18PIN DIP
IC6	*PC78M05H	3		
IC7	MB88201H-539N	8	16	16PIN DIP

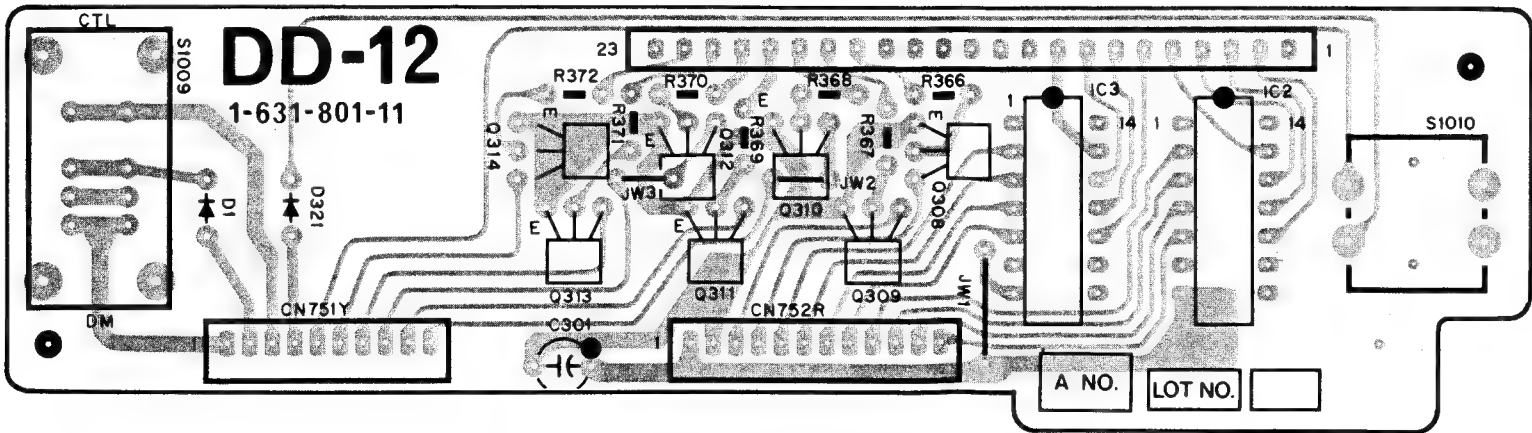
KY-162; FUNCTION KEY BOARD
DD-12; DISPLAY DRIVE
DP-101; DISPLAY
LP-52; MODE DISPLAY

KY-162(1-631-804-12) A SIDE

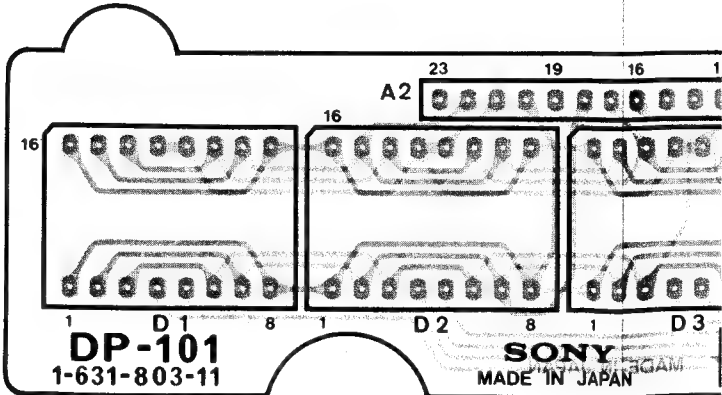
BT1	M-2	RB2	H-2
CN701	K-1	S1	G-1
CN702	C-2	S10	G-3
CN703	C-1	S12	J-2
CN704	E-1	S14	E-3
CN706	H-1	S15	L-1
		S16	K-3
D1	G-2	S17	J-3
D10	G-3	S18	H-3
D12	J-1	S19	L-3
D14	E-3	S23	E-1
D15	L-1	S24	D-1
D16	L-3	S29	D-1
D17	J-3		
D18	H-3	TP1	K-1
D19	L-3	TP2	J-1
D23	E-1	TP3	K-1
D24	E-2	TP4	K-3
D29	L-2	TP5	F-1
D45	K-1		
D46	J-1	X1	F-2
D48	M-2	X2	D-3
D49	M-1		
D51	L-2		
D52	K-3		
D54	L-2		
D55	D-2		
D102	G-2		
D104	J-1		
D108	G-1		
D109	K-2		
D110	J-3		
D111	H-2		
D112	E-3		
D113	E-2		
D114	B-1		
D115	A-1		
D116	B-1		
D117	K-2		
E1	K-2		
E2	D-2		
IC1	F-2		
IC4	J-1		
IC5	H-1		
IC6	M-1		
IC7	D-3		
Q2	H-3		
Q3	H-3		
Q4	J-3		
Q5	K-1		
Q6	J-1		
Q15	K-2		
RB1	G-2		



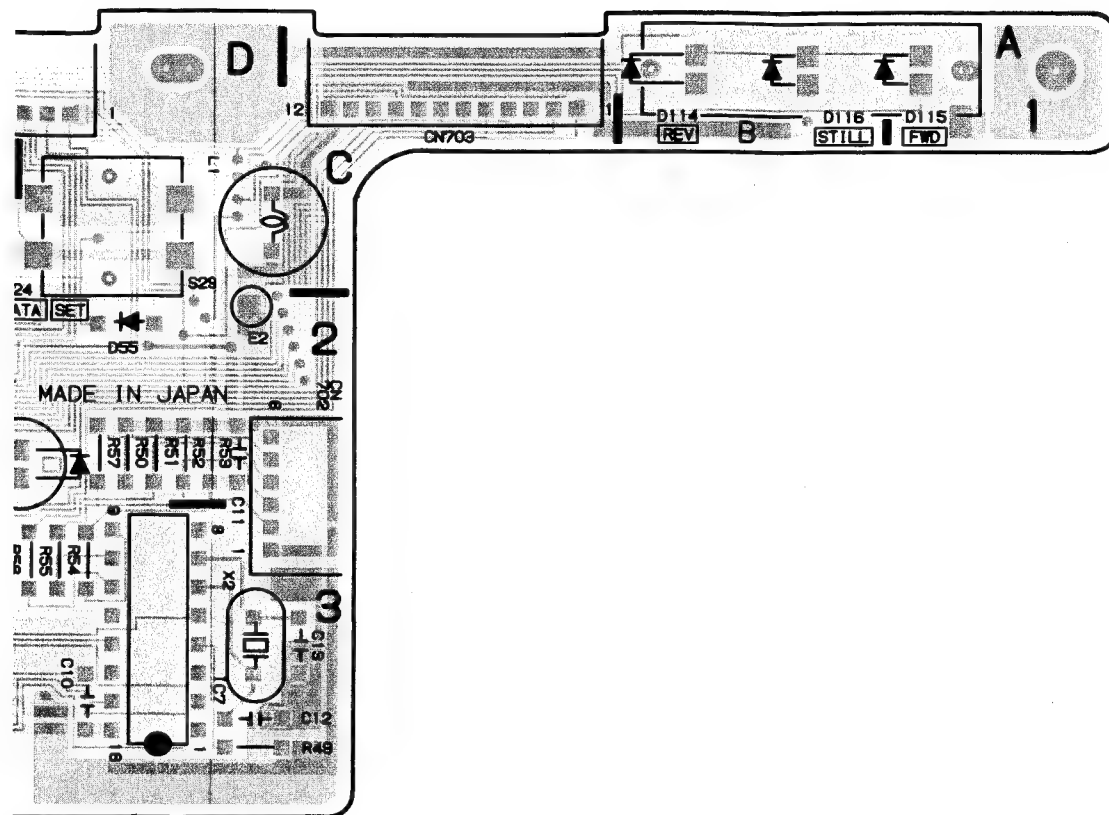
KY-162 —A SIDE—
1-631-804-12(I)
EVO-9800



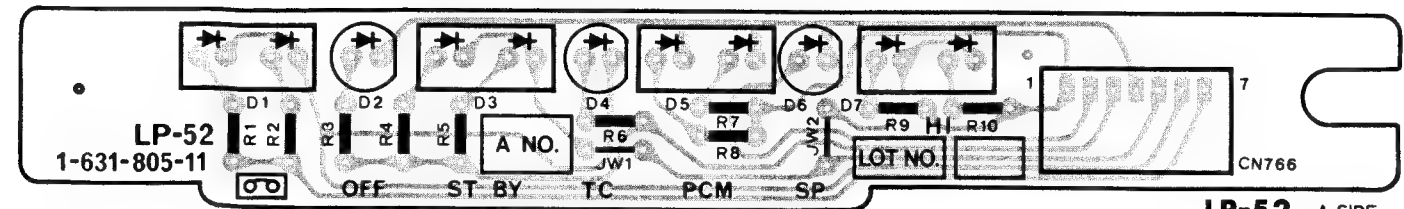
DD-12 —A SIDE—
1-631-801-11(I)
EVO-9800



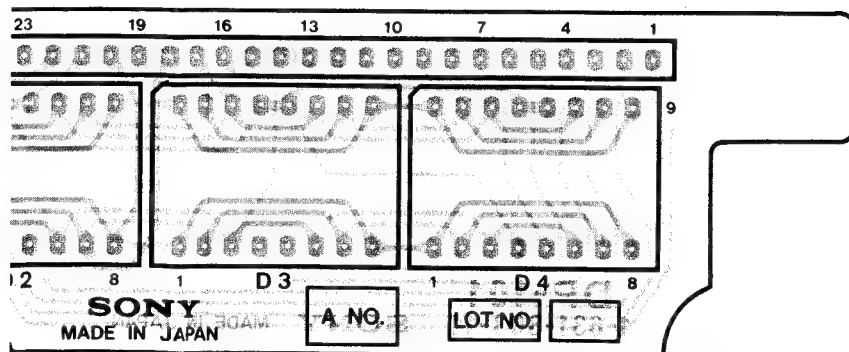
A Side is the same as COMPONENT Side



KY-162 —A SIDE—
1-631-804-12(1)
EVO-9800



LP-52 —A SIDE—
1-631-805-11(1)
EVO-9800



DP-101 —A SIDE—
1-631-803-11(1)
EVO-9800

A

B

C

D

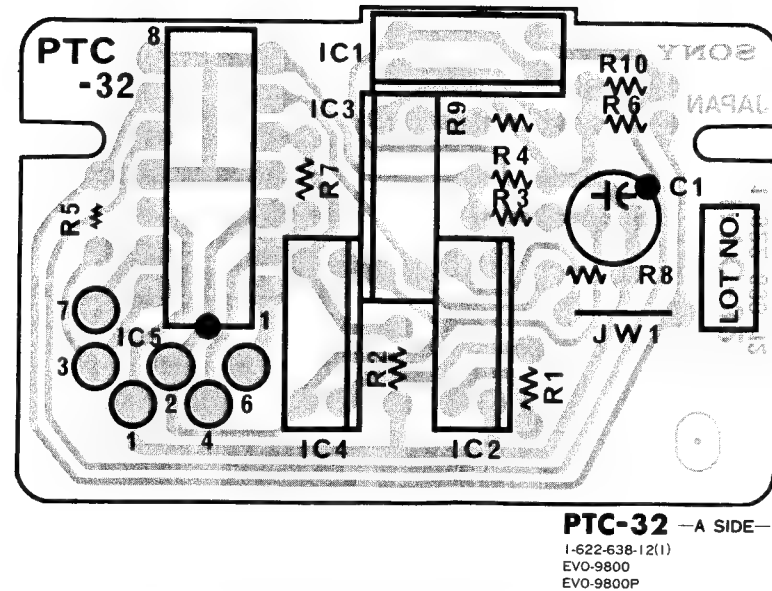
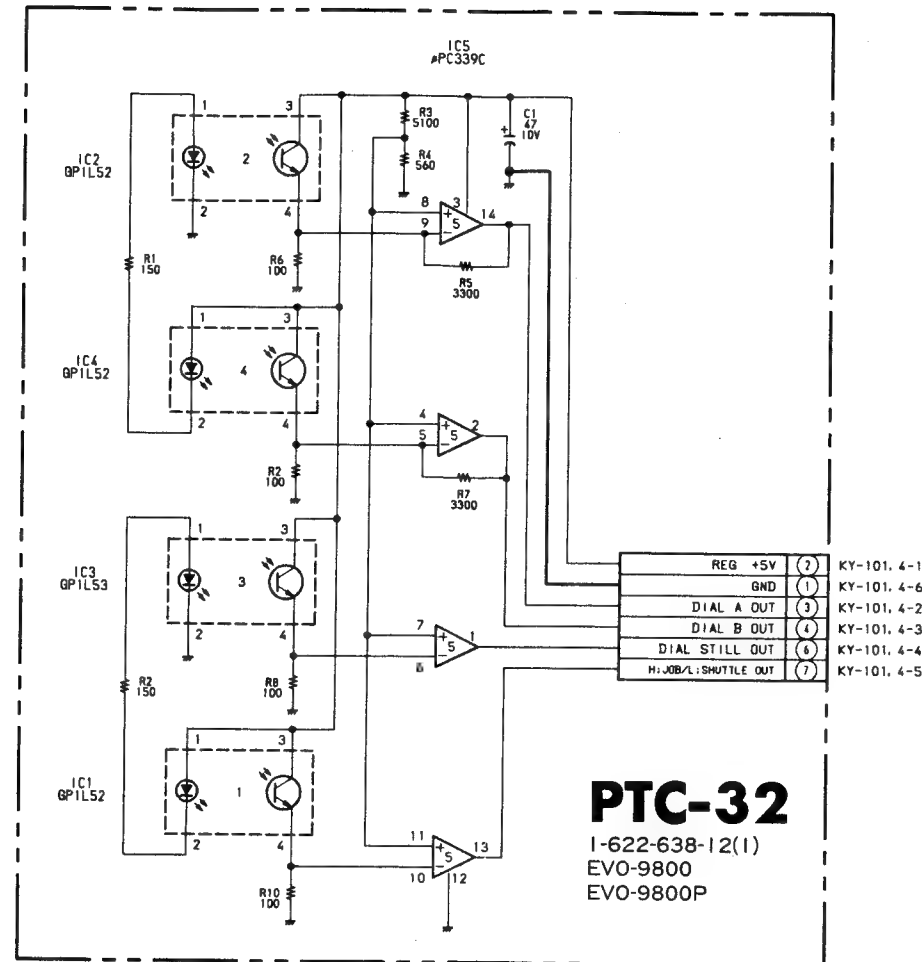
E

F

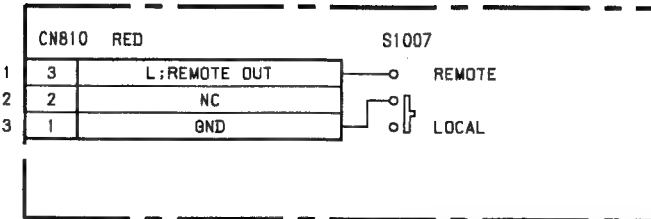
G

H

I

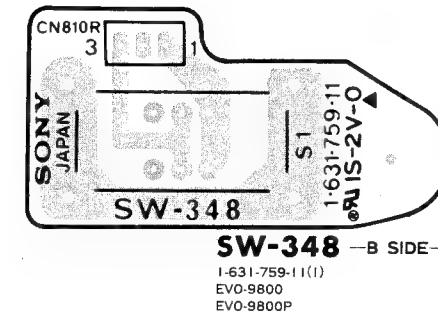


A Side is the same as COMPONENT Side

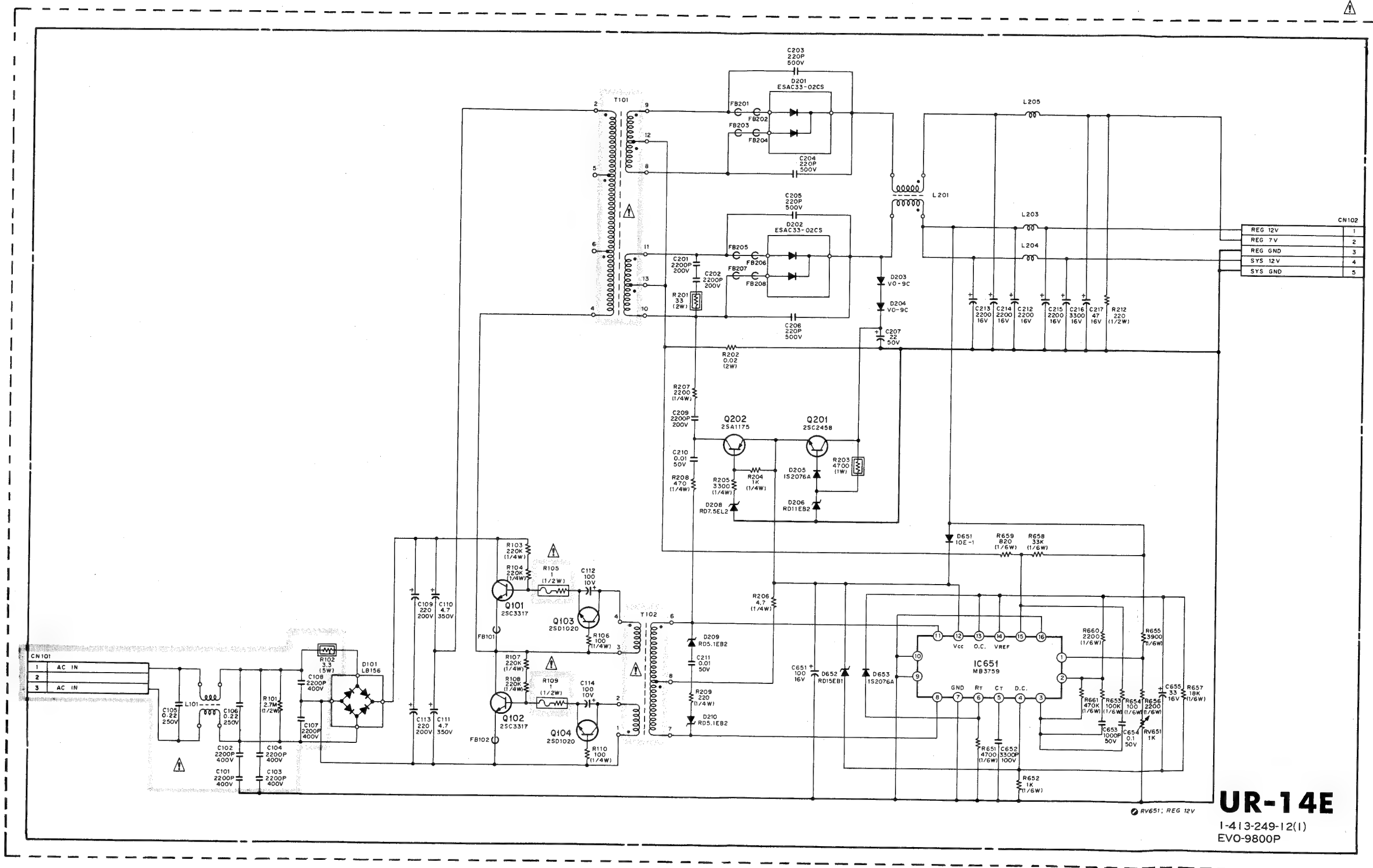


SW-348

I-631-759-11(1)
EVO-9800
EVO-9800P

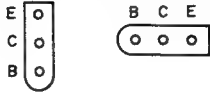
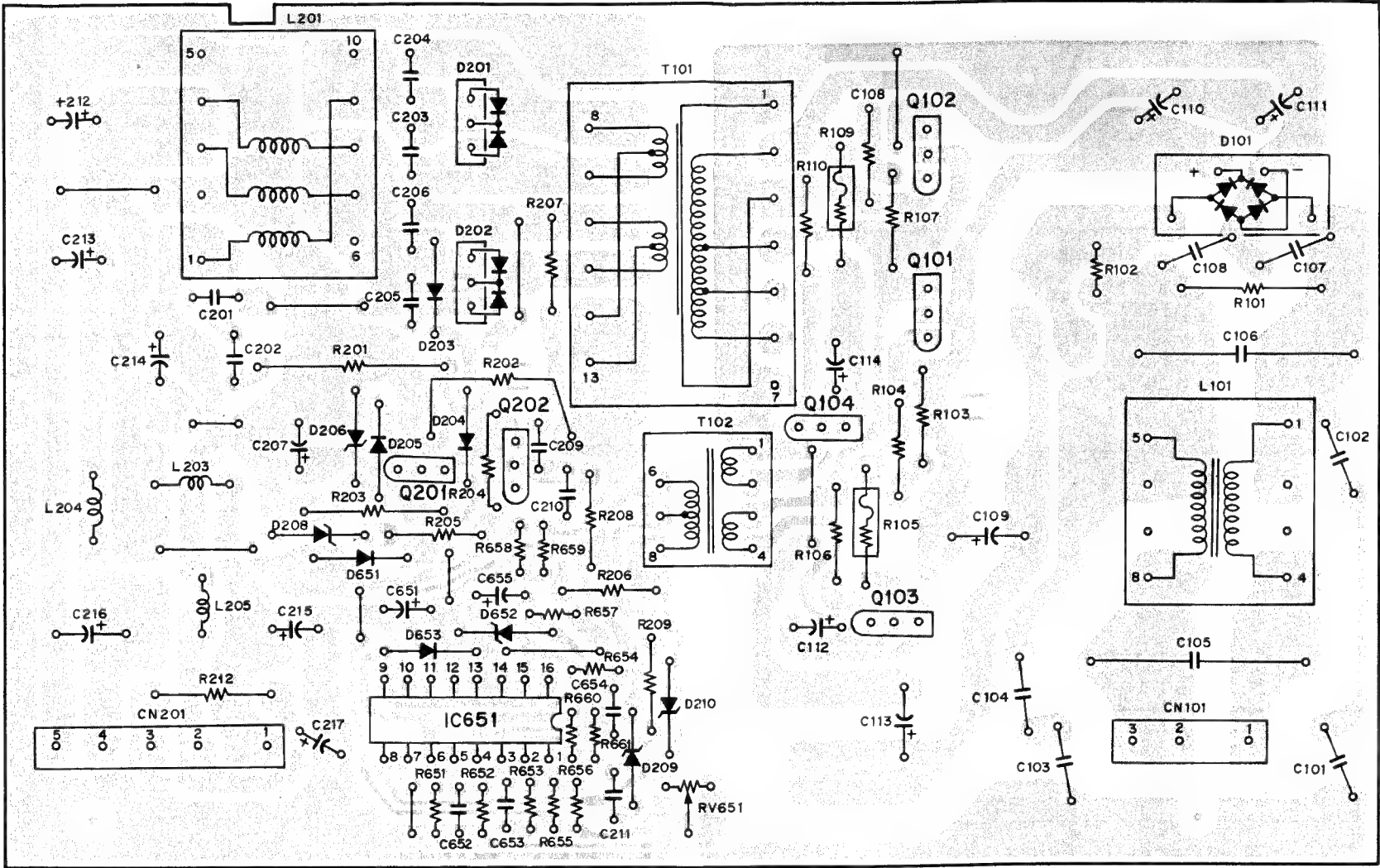


B Side is the same as SOLDER Side



NOTE:
The \triangle -marked components are critical to safety.
Replace only with same components as specified.

UR-14E; SWITCHING REGULATOR



UR-14E —B SIDE—
1-413-249-12(1)
EVO-9800P

B Side is the same as SOLDER Side

CN1 A-3
CN2 A-2
CN3 F-1
CN4 F-4
CN5 F-2
CN6 F-3
CN7 A-4

CP1 B-3
D1 B-2
D2 E-4
D3 E-4
D4 E-3
D5 E-3

E1 E-1S
E2 B-1S

F2 D-3

PS1 D-4
PS3 E-2
PS4 F-3
PS5 C-4

IC1 D-1
IC2 D-1
IC3 F-2

Q1 C-3
Q2 E-1
Q3 F-4
Q4 F-4
Q5 F-4
Q6 C-1
Q7 F-2

RV1 F-1

TP1 B-1S
TP2 F-1S
TP3 C-1S
TP4 F-1S
TP5 B-1S
TP6 F-1S
TP7 C-1S
TP8 E-1S

S: B SIDE (SOLDERING)

NOTE) *...for PAL model

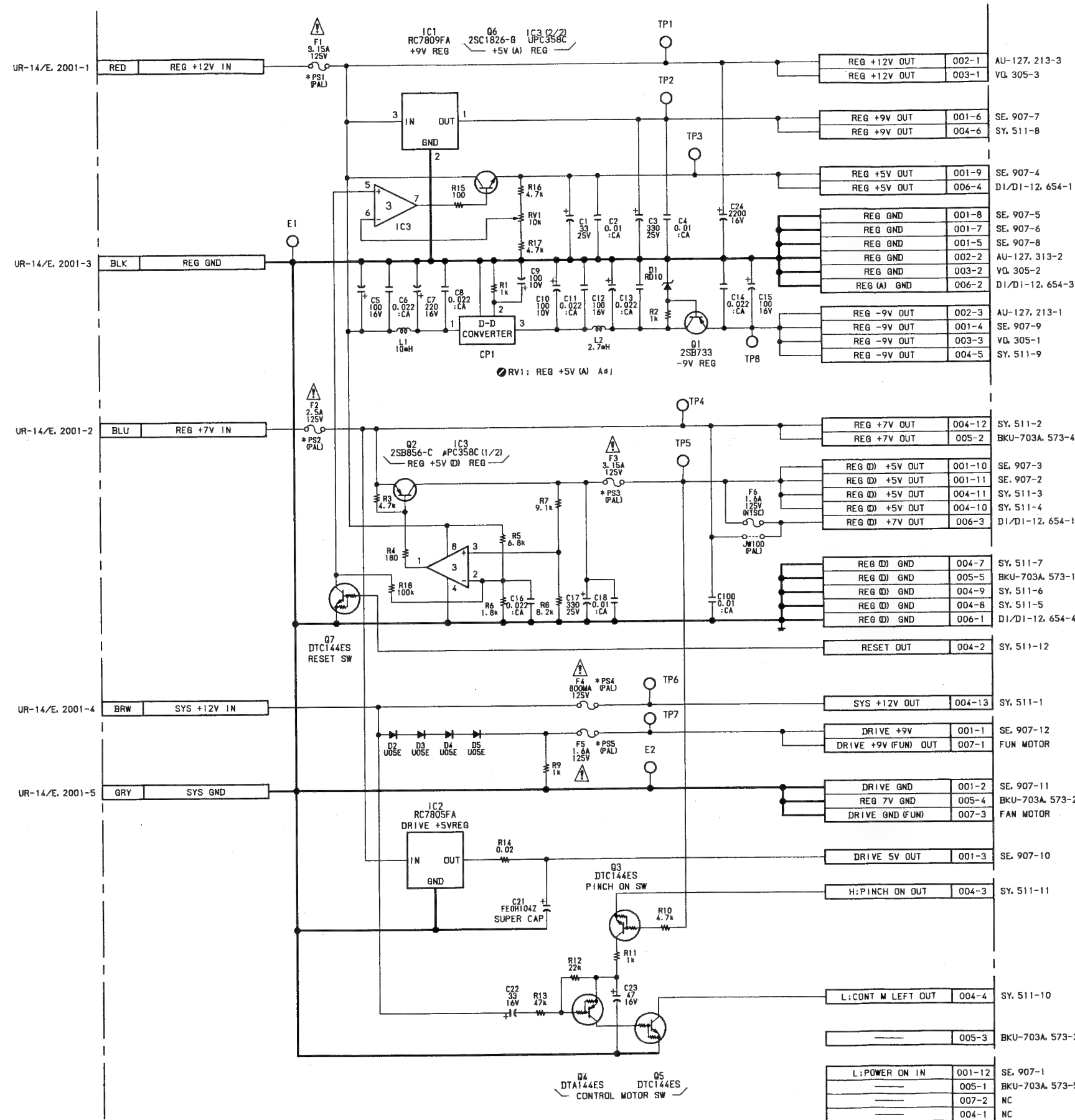
NTSC/PAL	
NTSC REF.	PAL REF.
F1 1-532-781-21	PS1 1-532-844-21
F2 1-532-701-11	PS2 1-532-286-11
F3 1-532-781-21	PS3 1-532-844-21
F4 1-532-775-21	PS4 1-532-838-21
F5 1-532-778-21	PS5 1-532-841-21
F6 1-532-778-21	:NM

NOTE) Mount JW100
only PAL model.

NOTE:
The Δ -marked components are critical to safety.
Replace only with same components as specified.

DC-45A

1-631-800-21(1)
EVO-9800P



DC-45A; DC SUPPLY

DC-45A(1-631-800-21) A SIDE

- CN1

A-3
- CN2

A-2
- CN3

F-1
- CN4

F-4
- CN5

F-2
- CN6

F-3
- CN7

A-4
- CP1

B-3
- D1

B-2
- D2

E-4
- D3

E-4
- D4

E-3
- D5

E-3
- E1

E-1S
- E2

B-1S
- F2

D-3
- PS1

D-4
- PS3

E-2
- PS4

F-3
- PS5

C-4
- IC1

D-1
- IC2

D-1
- IC3

F-2
- Q1

C-3
- Q2

E-1
- Q3

F-4
- Q4

F-4
- Q5

F-4
- Q6

C-1
- Q7

F-2
- RV1

F-1
- TP1

B-1S
- TP2

F-1S
- TP3

C-1S
- TP4

F-1S
- TP5

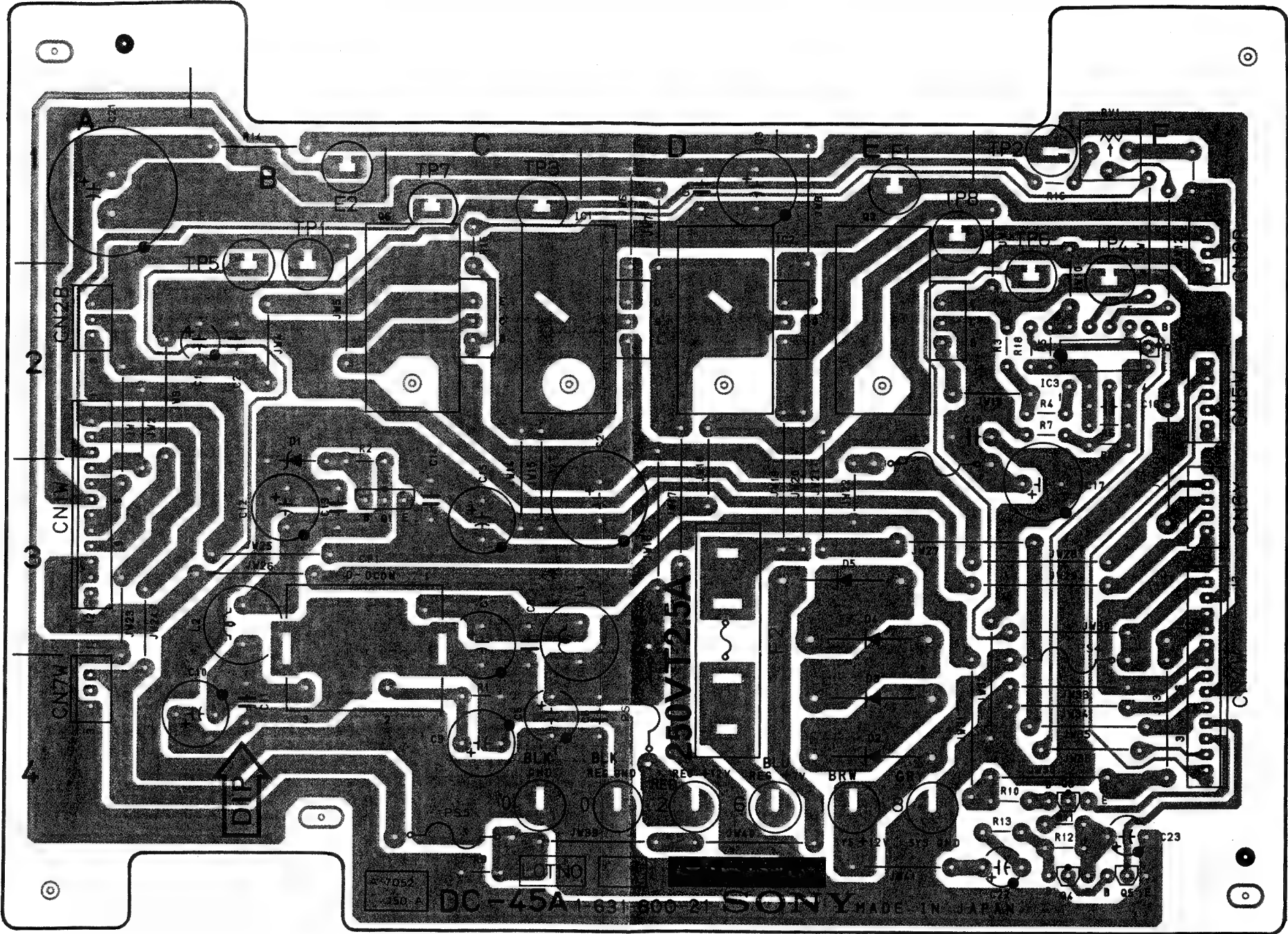
B-1S
- TP6

F-1S
- TP7

C-1S
- TP8

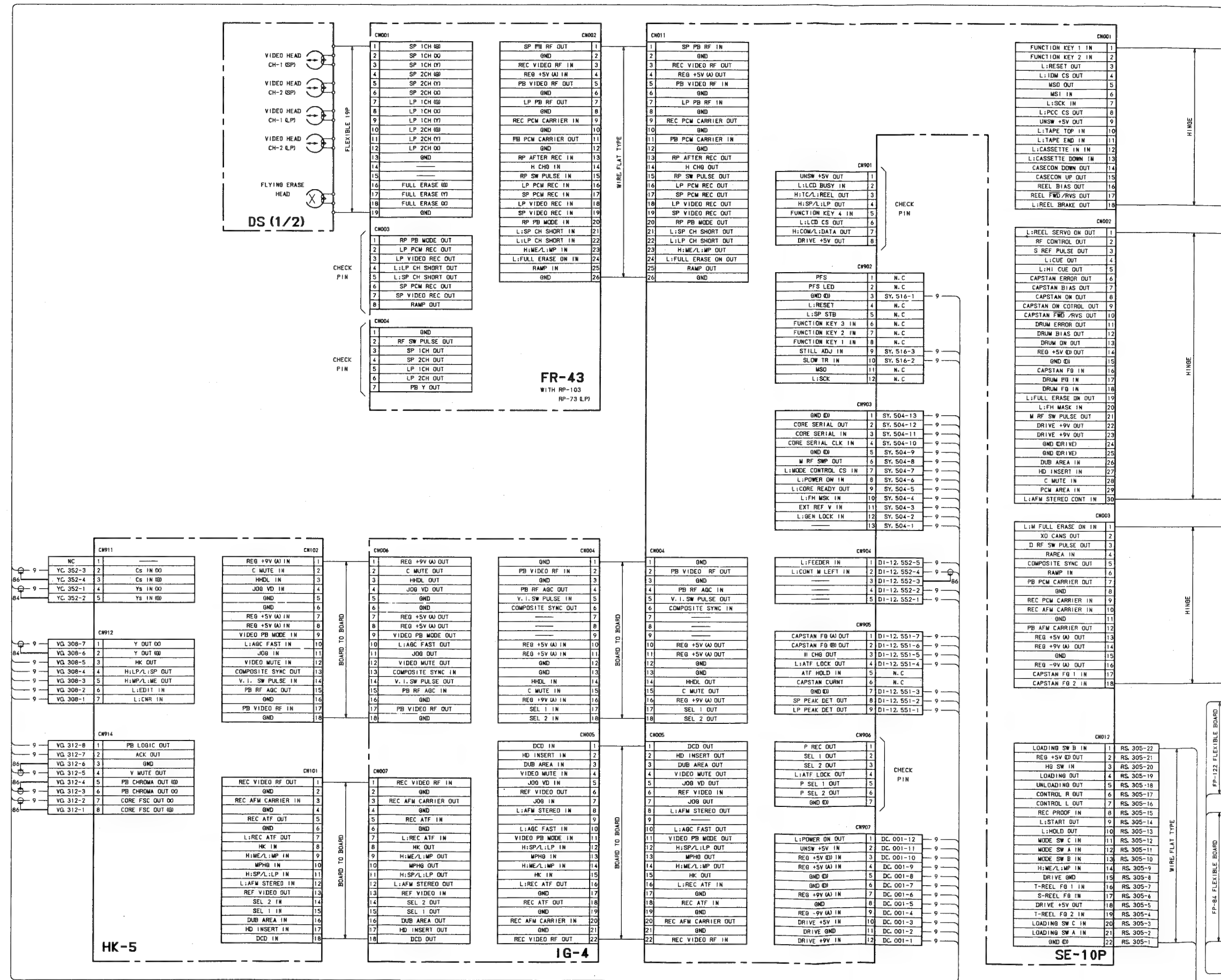
E-1S

S: B SIDE (SOLDERING SIDE)

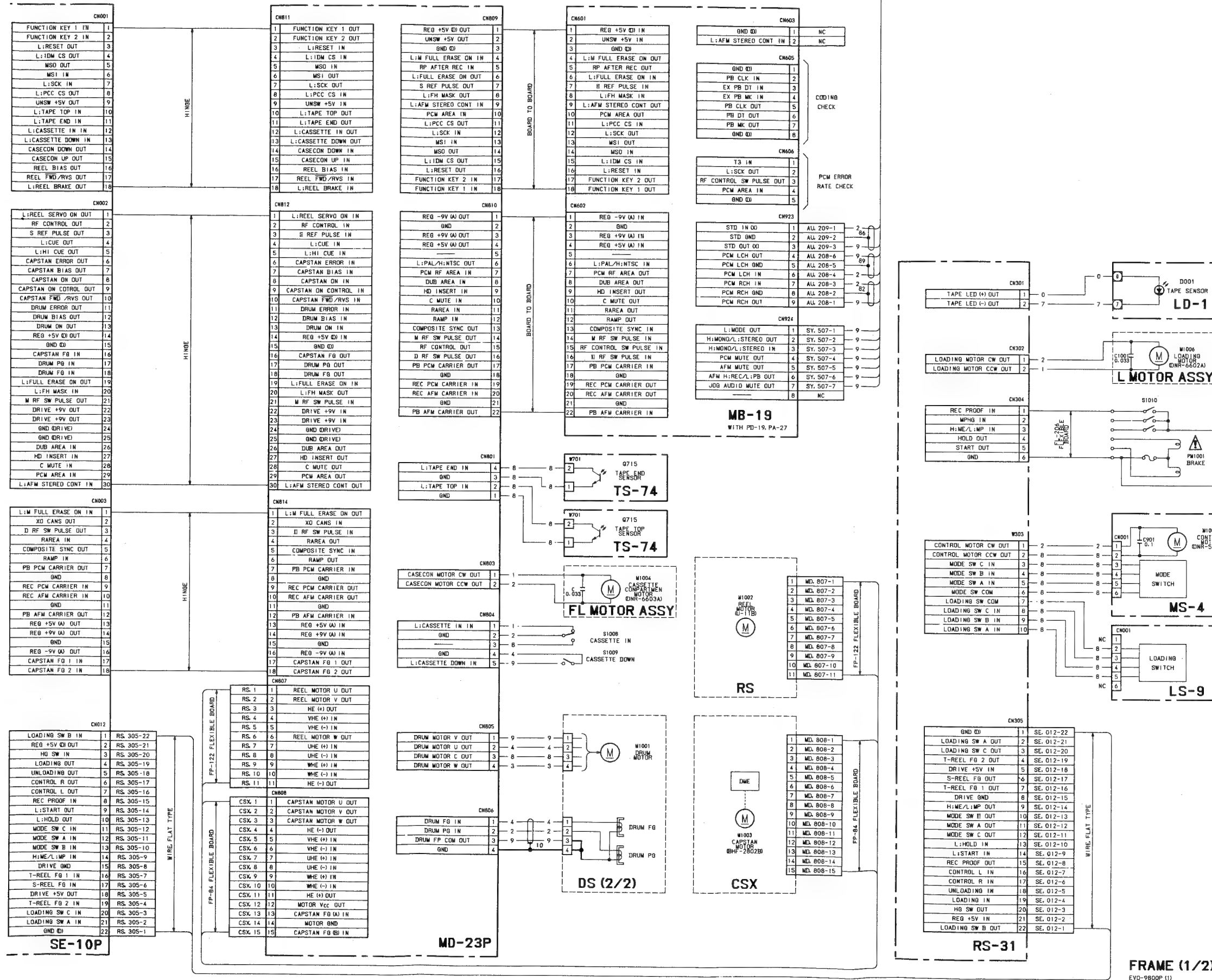


DC-45A —A SIDE—
1-631-800-21(1)
EVO-9800P

A Side is the same as COMPONENT Side



TO/FROM FRAME (2/2)

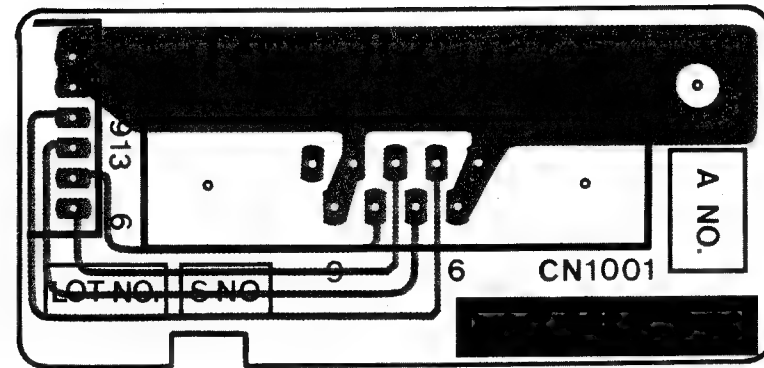


NOTE:
The -marked components are critical to safety.
Replace only with same components as specified.

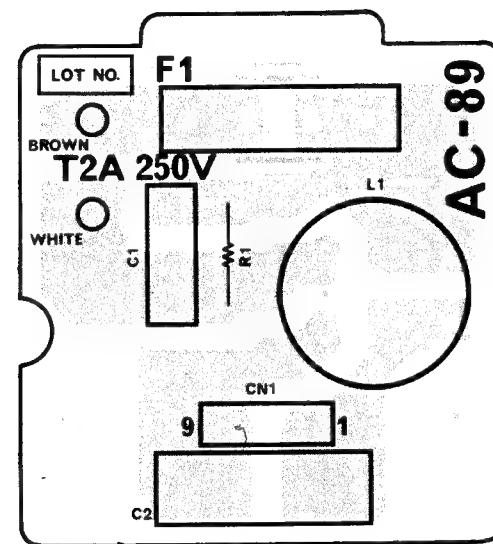
FRAME (1/2)
EVD-9800P (1)

RM-83; REMOTE CONNECTOR
AC-89; LINE FILTER

FRAME (2/2)

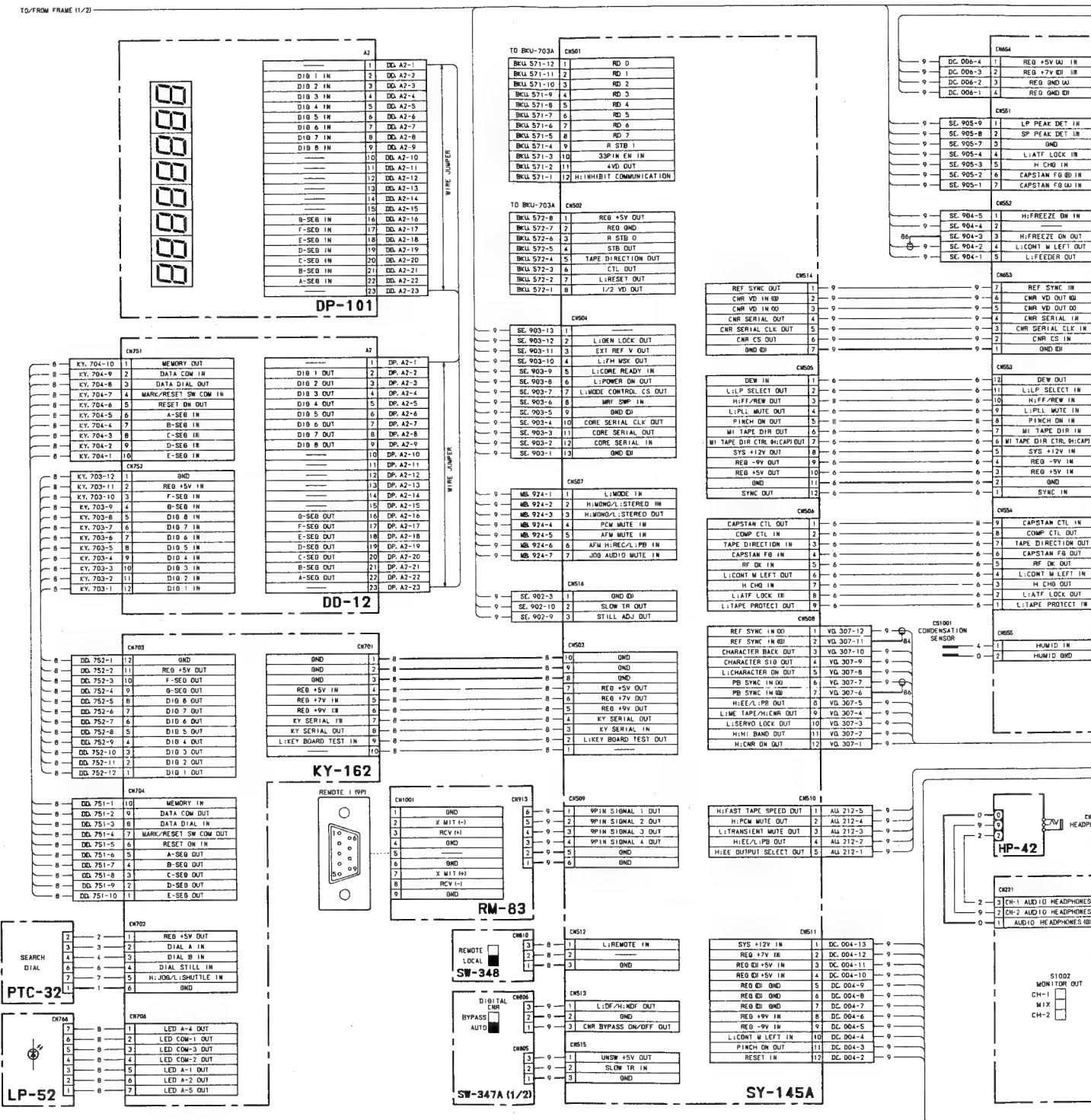


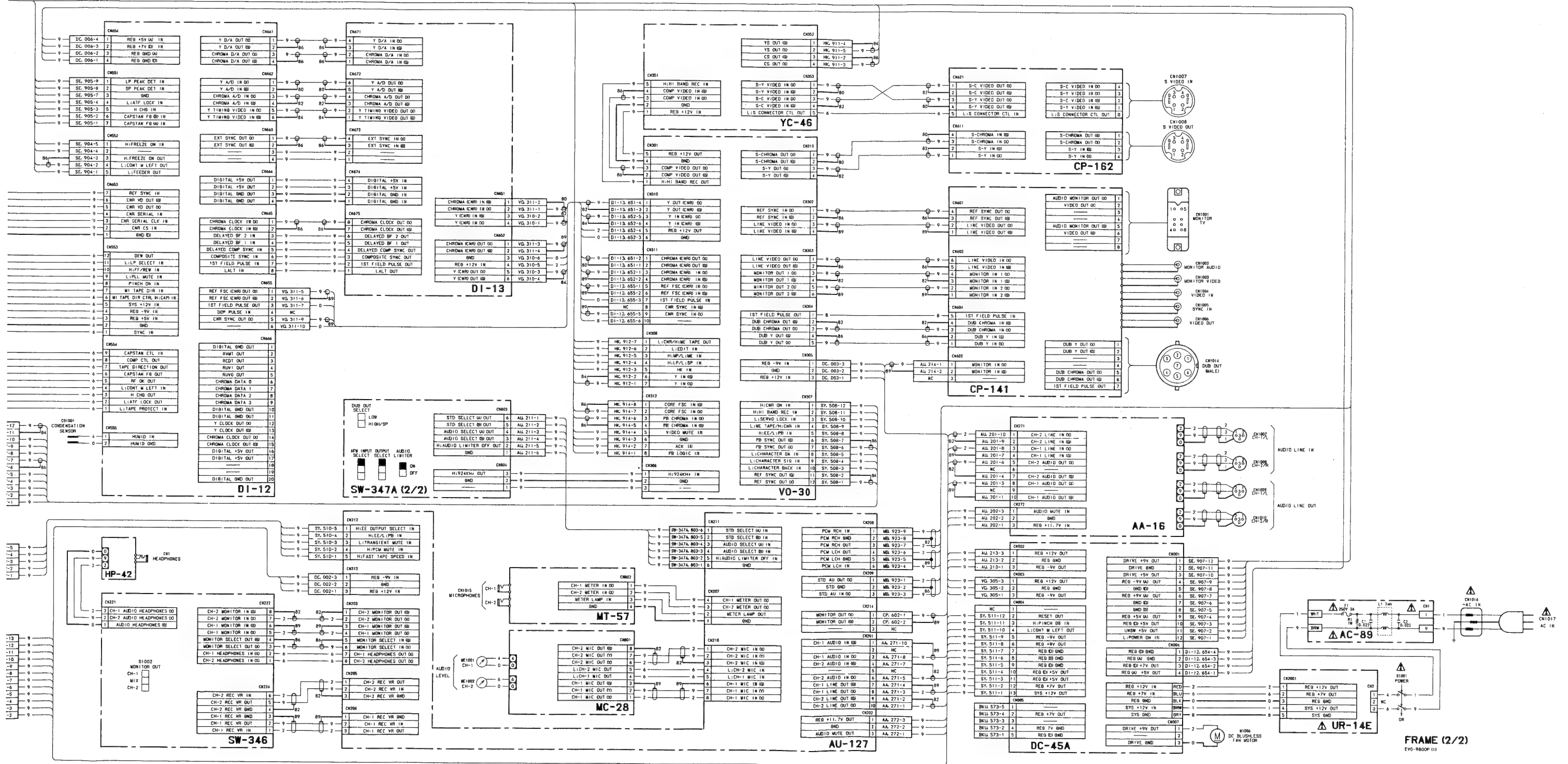
RM-83 — A SIDE —
1-635-086-11(1)
EVO-9800P



AC-89 —A SIDE—
1-622-786-12(1)
EVO-9800P

A Side is the same as COMPONENT Side





NOTE:
The Δ -marked components are critical to safety.
Replace only with same components as specified.

SECTION 14

SPARE PARTS AND FIXTURE

14-1. PARTS INFORMATION

- (1) The shaded and Δ -marked components are critical to safety.
Replace only with same components as specified.
- (2) Replacement Parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to improved parts and/or engineering changes or standardization of genuine parts.
This manual's exploded views and electrical spare parts list indicate the part numbers of the standardized genuine parts at the present. Regarding engineering part changes by the engineering department, refer to Sony service bulletins and service manual supplements.
- (3) The parts marked with s in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with o in the SP column are not normally required for routine service work. Orders for parts marked with o will be processed, but allow for additional delivery time.
- (4) Items with no part number and/or no description are not stocked because they are seldom required for routine service.
- (5) (T) after a spring description is shown on the exploded views in order to indicate the number of spring turns required for the use.
.Example
Spring, tension (24T); This spring must be cut at its 24th turn for actual use.
- (6) All capacitors are in micro farads unless otherwise specified.
All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

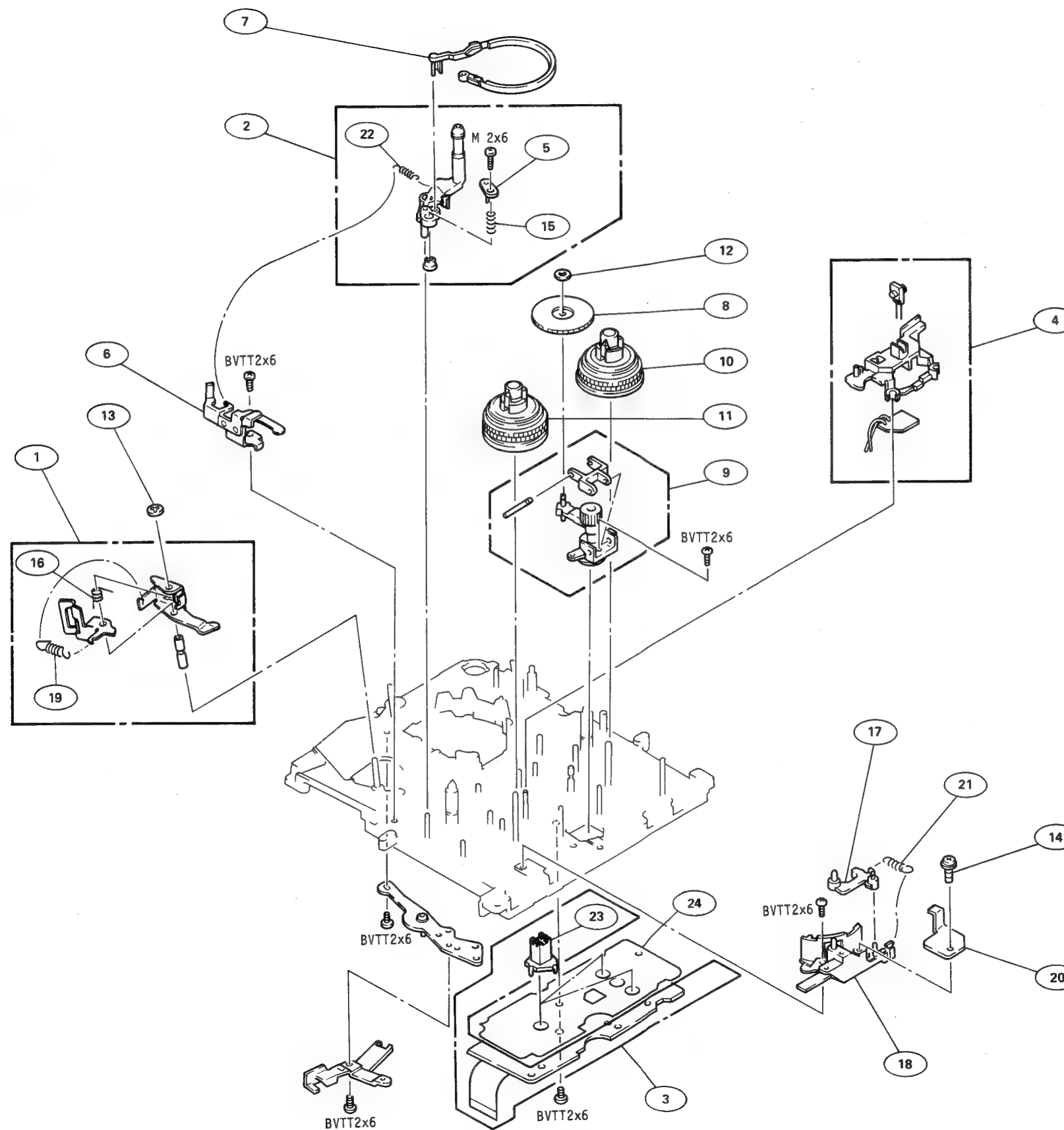
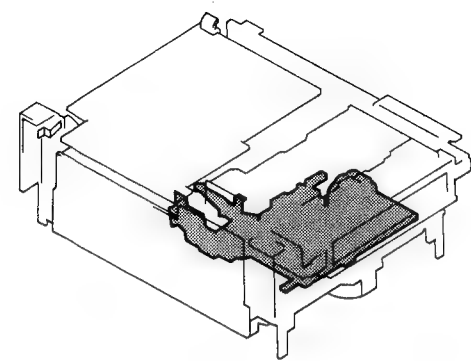
14-2. EXPLODED VIEWS

. Exploded views are composed of the following blocks.

- | | |
|--|--|
| (1) Reel Table Block
Tension Regulator Arm
T Reel Table
S Reel Table
S Soft Table | (6) Cassette-up Compartment Block (2) |
| (2) Threading Ring and Tape Path Blocks
Tape Guides
Threading Motor
Threading Ring
T Main Brake
S Main Brake
Capstan Motor | (7) Printed Circuit Boads Block (Mechanical Deck)
Printed Circuit Boards
Reel Motor |
| (3) Head Drum and Threading Control Blocks
Head Drum
L Slider Assembly
Tape Guides
Pinch Press Lever
L-switch Assembly | (8) Function Control Chassis Block
Function Control Panel
Search Dial |
| (4) Mechanism Control Block
M-switch Assembly
T.S Brake
REW Brake
S Hard Brake
Control Motor | (9) Connector Panel Block
Switching Regulator (UR-14) |
| (5) Cassette-up Compartment Block (1)
FL Motor (Cassette Loading)
Tape TOP/END sensor | (10) Printed Circuit Boards
Power Switch |
| | (11) Ornamental Panel Block
Top Plate
Front Panel
Key Panel
Side Plate
Bottom Plate |

REEL TABLE BLOCK REEL TABLE BLOCK

Reel Table Block

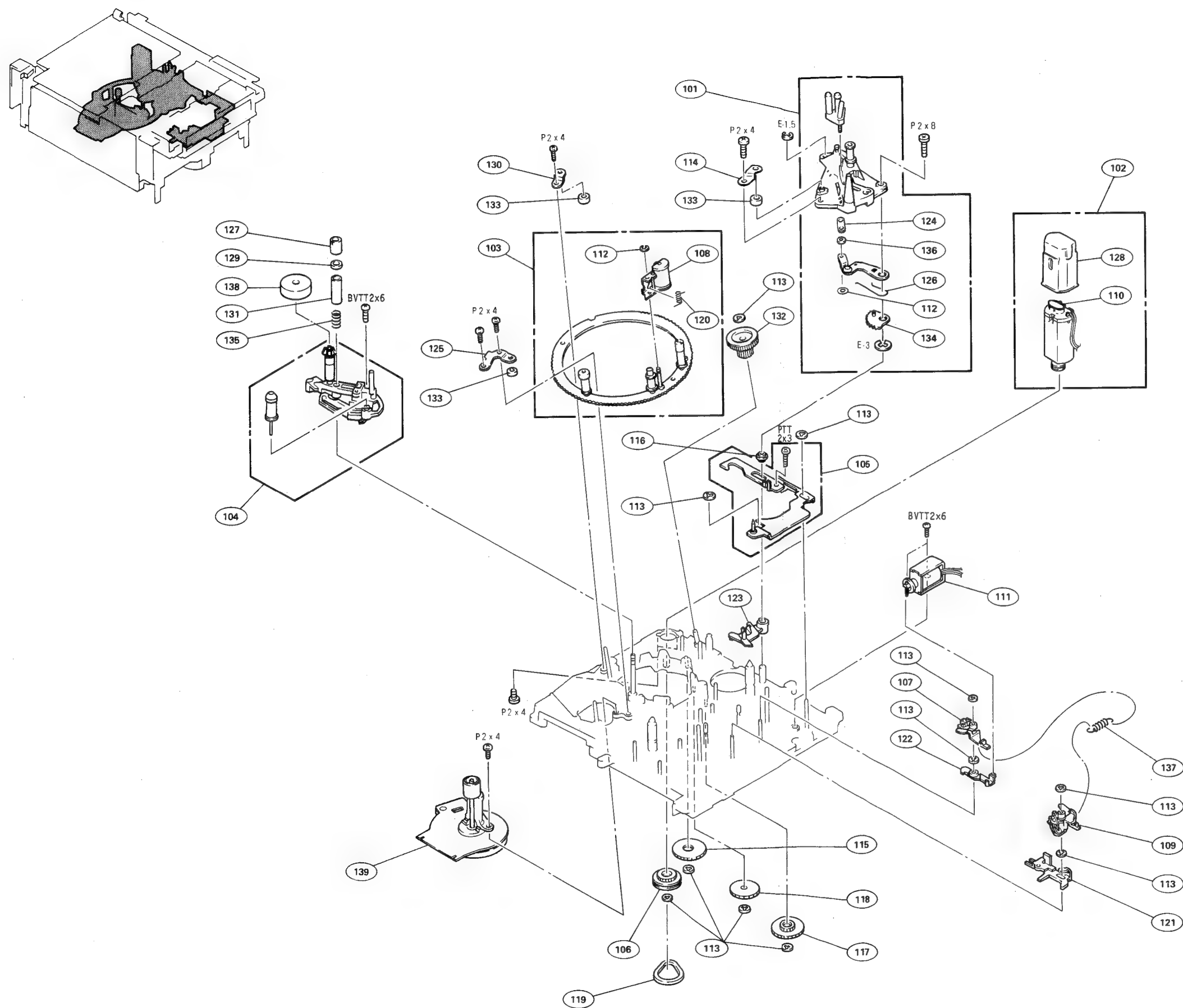


No.	Part No.	SP	Description
1	A-7040-008-A	s	ARM ASSY, PINCH PRESS
2	A-7040-071-A	s	ARM ASSY, TENSION REGULATOR
3	A-7061-818-A	o	MOUNTED CIRCUIT BOARD, RS-31
4	A-7070-024-A	o	MOUNTED CIRCUIT BOARD, LD-1
5	X-3686-523-1	o	PLATE ASSY, TENSION REGULATOR
6	X-3686-525-1	o	HOOK ASSY, SPRING
7	X-3686-531-1	s	BAND ASSY, TENSION REGULATOR
8	X-3686-763-1	s	GEAR (B) ASSY, DRIVING
9	X-3711-963-1	s	DRIVING COMPLETE ASSY
10	X-3711-998-1	s	TABLE ASSY, REEL, TAKE-UP
11	X-3713-427-1	s	TABLE ASSY, REEL, SUPPLY
12	3-315-384-31	s	WASHER, STOPPER
13	3-669-465-00	s	WASHER (1.5), STOPPER
14	3-669-480-11	s	+ PTPWH 2
15	3-669-666-00	s	SPRING, COMPRESSION
16	3-686-568-01	s	SPRING, TORSION
17	3-686-637-01	o	BRAKE (S), SOFT
18	3-686-760-01	o	GUIDE, BAND
19	3-686-885-01	s	SPRING, TENSION
20	3-686-991-01	o	STOPPER, REEL TABLE
21	3-714-014-01	s	SPRING, TENSION
22	3-699-519-01	s	SPRING, TENSION
23	3-712-410-01	s	HOLDER, RS
24	3-712-411-01	s	INSULATOR, RS

THREADING RING AND TAPE PATH BLOCKS

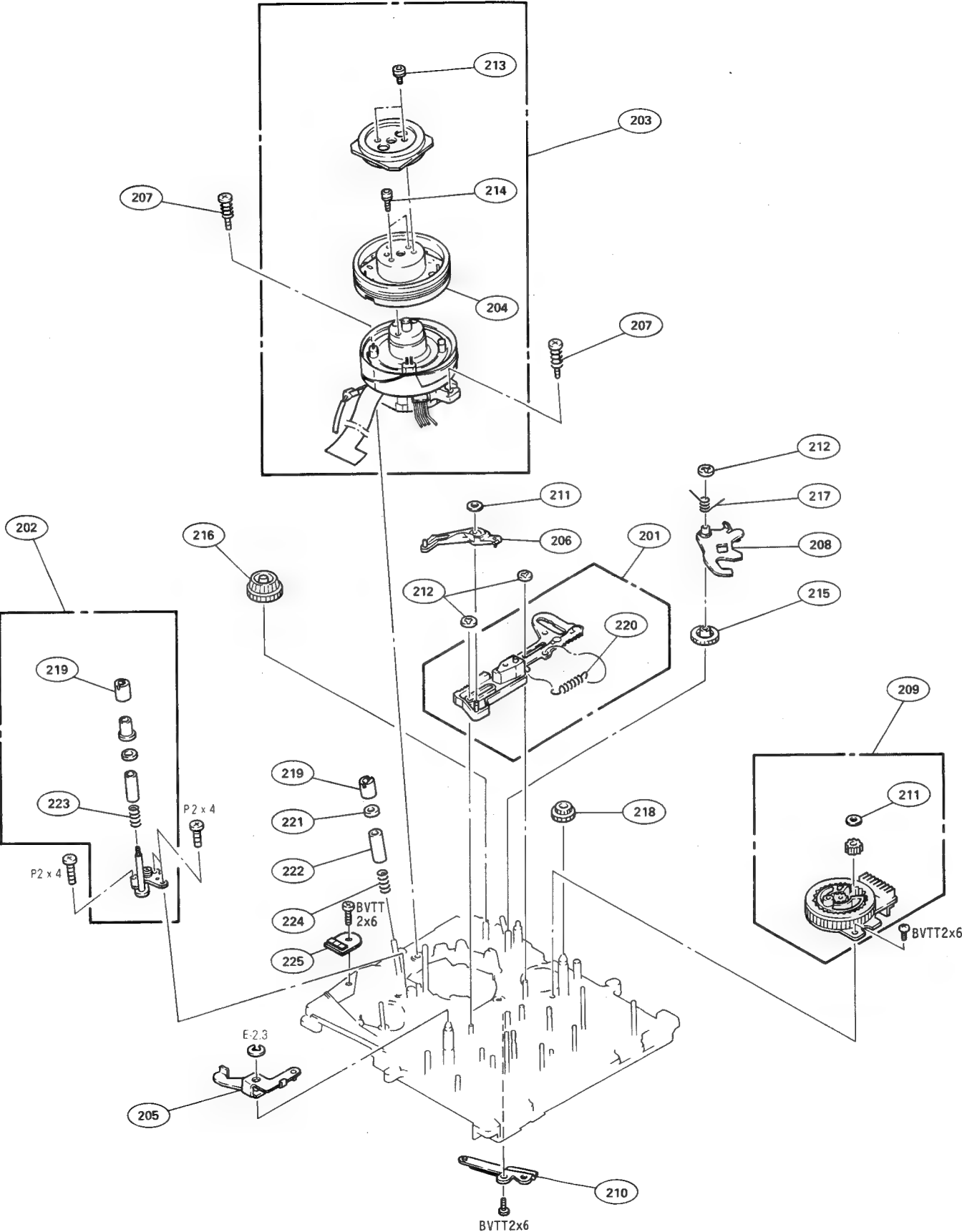
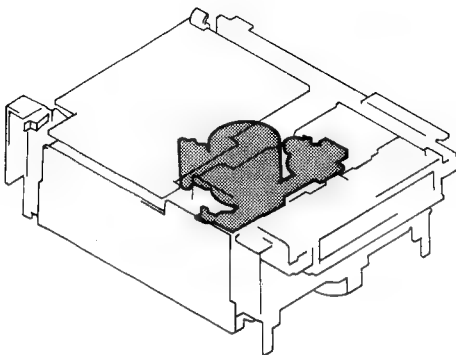
THREADING RING AND TAPE PATH BLOCKS

Threading Ring and Tape Path Blocks



No.	Part No.	SP	Description
101	A-7040-001-A	s	GUIDE BLOCK ASSY, SLANT
102	A-7040-065-A	s	MOTOR ASSY, L (THREADING)
103	A-7040-123-A	s	RING ASSY, THREADING
104	A-7040-169-D	s	GUIDE (P) ASSY, ENTRANCE
105	A-7040-199-A	s	SLIDER (M) BLOCK ASSY, LOCK
106	X-3686-514-1	s	GEAR ASSY, NO.1
107	X-3686-574-1	s	BRAKE ASSY, MAIN, TAKE-UP
108	X-3686-648-1	s	ARM ASSY, PINCH ROLLER
109	X-3713-429-1	s	BRAKE ASSY, MAIN, S
110	1-161-057-00	s	CAP, CERAMIC 0,033MF X
111	1-454-377-31	s	SOLENOID, PLUNGER
112	3-315-384-31	s	WASHER, STOPPER
113	3-669-465-00	s	WASHER (1.5), STOPPER
114	3-686-503-01	o	RETAINER, ROLLER
115	3-686-508-01	s	GEAR, NO.2
116	3-686-537-01	s	RETAINER, LOCK SLIDER
117	3-686-544-01	s	GEAR, NO.4
118	3-686-545-01	s	GEAR, NO.3
119	3-686-546-01	s	BELT, L- MOTOR
120	3-726-704-01	s	SPRING, TORSION
121	3-686-629-01	o	SLIDER, SELECTION, UPPER & LOWER
122	3-686-635-01	o	ARM, P
123	3-686-636-04	o	ARM, T,S RELEASE
124	3-686-663-01	s	WASHER, STOPPER, 2 GANG
125	3-686-675-01	o	STOPPER, RING
126	3-686-701-01	s	SPRING
127	3-686-724-01	s	NUT, GUIDE
128	3-686-757-01	o	CAP, SHIELD, L MOTOR
129	3-686-894-01	o	FLANGE, #3 #4 GUIDE
130	3-686-911-01	o	PLATE, TOP, ROLLER
131	3-686-912-01	s	GUIDE, #3 #4
132	3-697-518-01	s	GEAR, NO.10
133	3-697-538-01	s	ROLLER, RING
134	3-699-509-01	s	GEAR, SECTOR
135	3-699-609-01	s	SPRING, COMPRESSION
136	3-701-436-21	s	WASHER, POLY 1,6MM DIA., 0,5T
137	3-713-560-01	s	SPRING, TENSION
138	3-722-153-01	s	FLYWHEEL
139	8-835-364-01	s	MOTOR, DC (BHF-2802B)

Head Drum and Threading Control Blocks

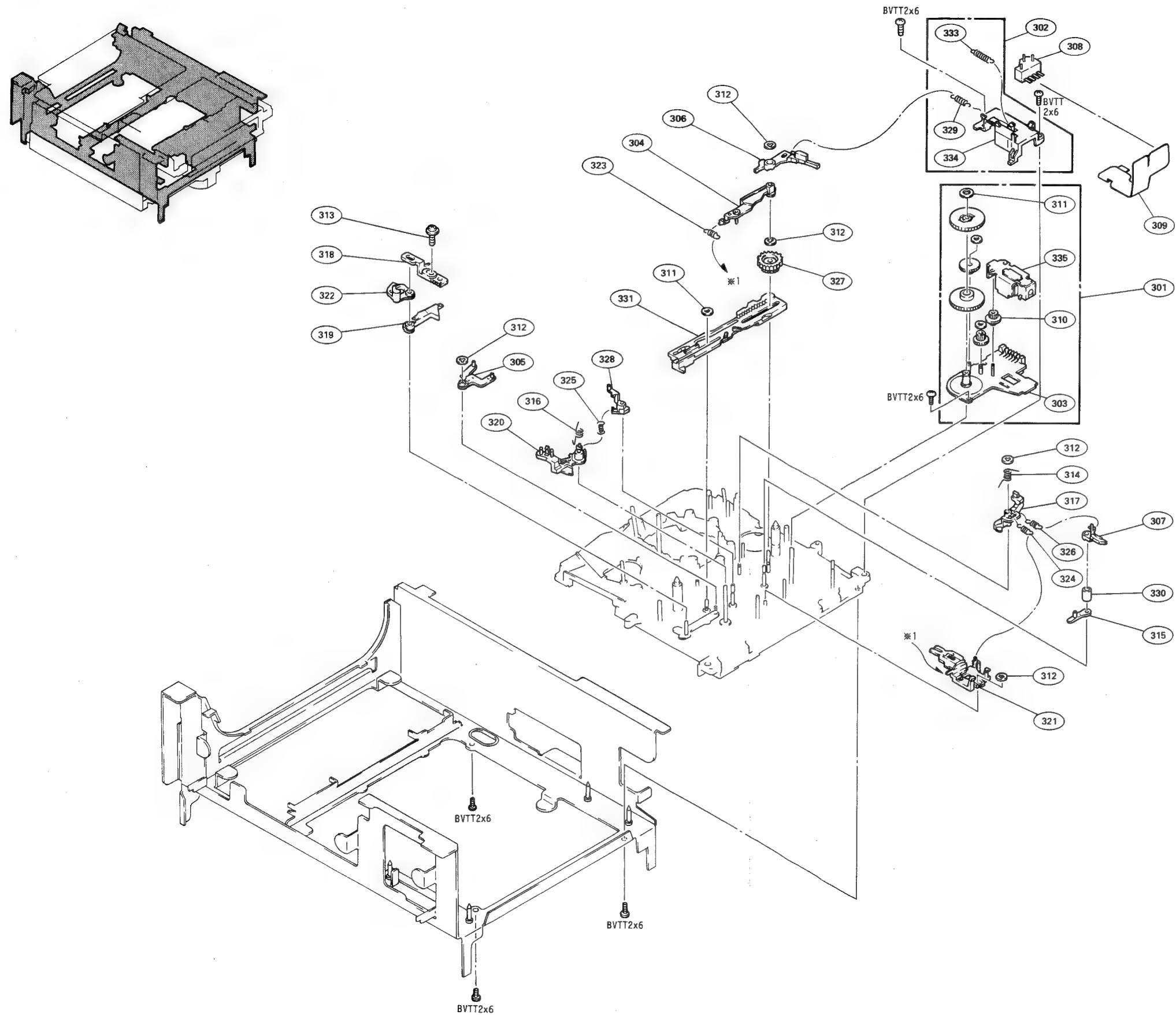


No.	Part No.	SP	Description
201	A-7040-010-A	o	SLIDER ASSY, L
202	A-7040-058-A	s	GUIDE BLOCK COMPLETE ASSY, #5
203	A-7048-389-A	s	DRUM ASSY (DGH-68A-R)
204	A-7049-328-A	s	DRUM ASSY, ROTARY (UPPER) (DGR-68-R)
205	X-3686-509-1	o	LEVER ASSY, PINCH PRESS
206	X-3686-518-3	o	ARM ASSY
207	X-3686-569-1	s	SCREW ASSY, FITTING
208	X-3686-579-1	s	CHANGE ASSY, DRIVE
209	X-3712-403-1	s	L-SW ASSY
210	1-535-535-11	s	TERMINAL, SHAFT GROUND
211	3-315-384-31	s	WASHER, STOPPER
212	3-669-465-00	s	WASHER (1.5), STOPPER
213	3-686-422-01	s	WASHER (2X2.7), BOLT, HOLE
214	3-686-493-01	s	SCREW (M2x5), P1
215	3-686-535-01	s	GEAR, NO.8
216	3-686-539-01	s	GEAR, NO.9
217	3-686-540-01	s	SPRING, TORSION
218	3-686-702-01	s	GEAR, DRIVING, GUIDE, SLANT
219	3-686-724-01	s	NUT, GUIDE
220	3-686-886-01	s	SPRING, TENSION
221	3-686-894-01	o	FLANGE, #3 #4 GUIDE
222	3-686-912-01	s	GUIDE, #3 #4
223	3-699-514-01	s	SPRING, COMPRESSION
224	3-699-609-01	s	SPRING, COMPRESSION
225	1-808-506-12	s	SENSOR, DEW CONDENSATION

MECHANISM CONTROL BLOCK

MECHANISM CONTROL BLOCK

Mechanism Control Block

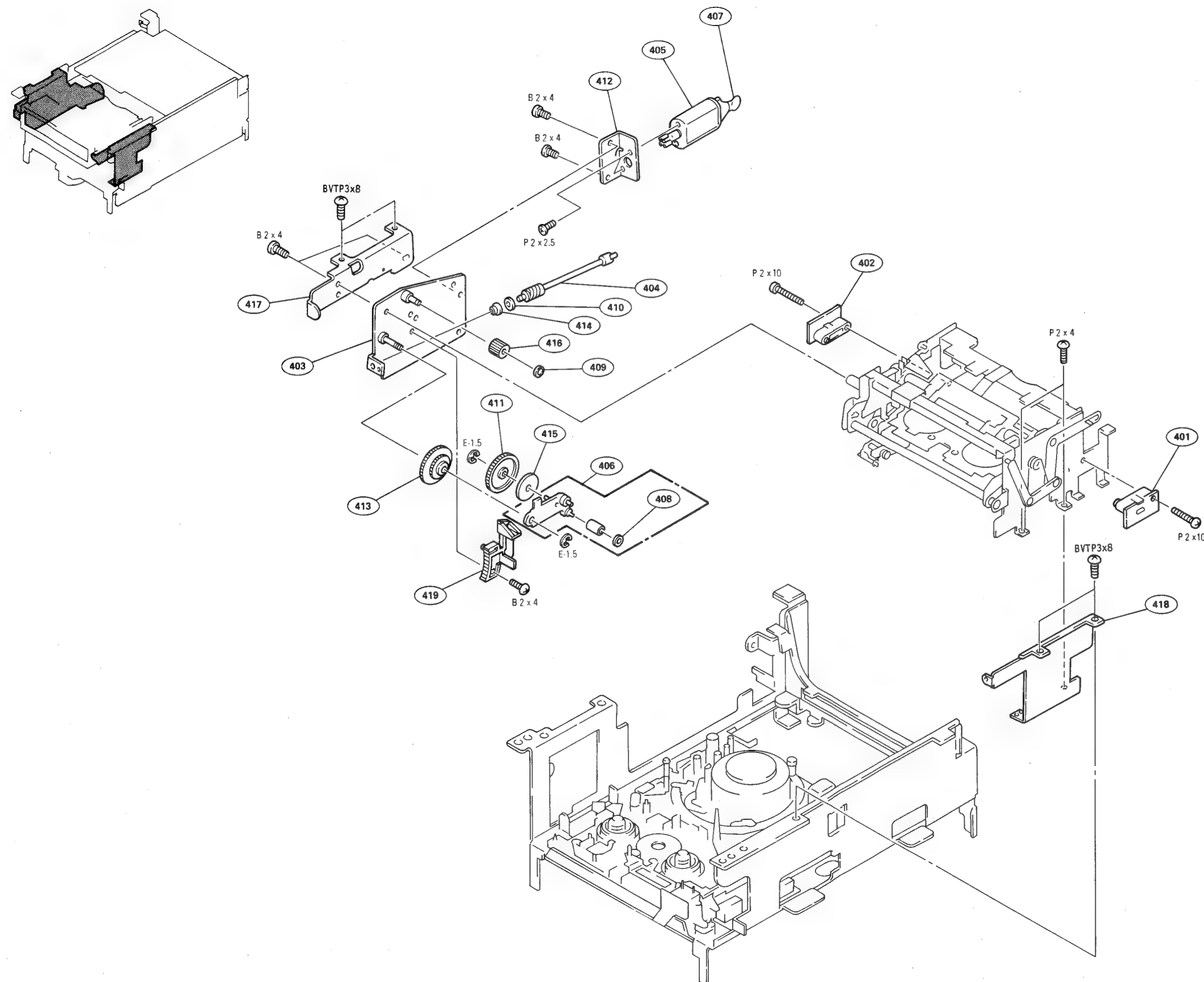


No.	Part No.	SP	Description
301	A-7040-159-A	s	M-SW ASSY
302	A-7040-198-A	s	COVER (M) ASSY, C MOTOR
303	A-7090-029-A	s	MOUNTED CIRCUIT BOARD, MS-4
304	X-3686-528-4	o	ARM ASSY, B RELEASE
305	X-3686-530-1	o	ARM (A) ASSY, SELECTION
306	X-3711-987-2	s	BRAKE ASSY, T.S
307	X-3711-993-1	s	BRAKE ASSY, REW
308	1-572-298-21	s	SWITCH, PUSH
309	1-630-923-11	o	FP-206 FLEXIBLE BOARD
310	3-308-502-00	s	WHEEL, WORM
311	3-315-384-31	s	WASHER, STOPPER
312	3-669-465-00	s	WASHER (1.5), STOPPER
313	3-686-528-01	s	SCREW (2X6), +
314	3-686-579-01	s	SPRING
315	3-686-580-01	o	ARM, SET UP
316	3-686-603-04	s	SPRING
317	3-686-634-01	o	ARM, RL
318	3-686-642-01	o	PLATE, ADJSUTMENT, BAND
319	3-686-643-01	o	ARM, MODE
320	3-686-644-01	o	ARM, BAND
321	3-686-656-01	o	SLIDER, B RELEASE
322	3-686-755-01	o	DISK, EJECT
323	3-686-903-01	s	SPRING, TENSION
324	3-686-904-01	s	SPRING, TENSION
325	3-686-905-02	s	SPRING, TENSION
326	3-686-906-01	s	SPRING, TENSION
327	3-686-909-01	s	GEAR, MODE OUTPUT
328	3-686-996-01	s	BRAKE (S), HARD
329	3-714-035-01	s	SPRING, TENSION
330	3-716-933-01	s	SPACER, REW BRAKE
331	3-716-935-01	s	SLIDER, M
333	3-722-110-01	s	SPRING, TENSION
334	3-739-107-01	s	COVER (M), C MOTOR
335	8-835-138-01	s	MOTOR, DC (DNR-5301B) (CONTROL)

CASSETTE UP COMPARTMENT BLOCK (1)

CASSETTE UP COMPARTMENT BLOCK (1)

Cassette Up Compartment Block (1)

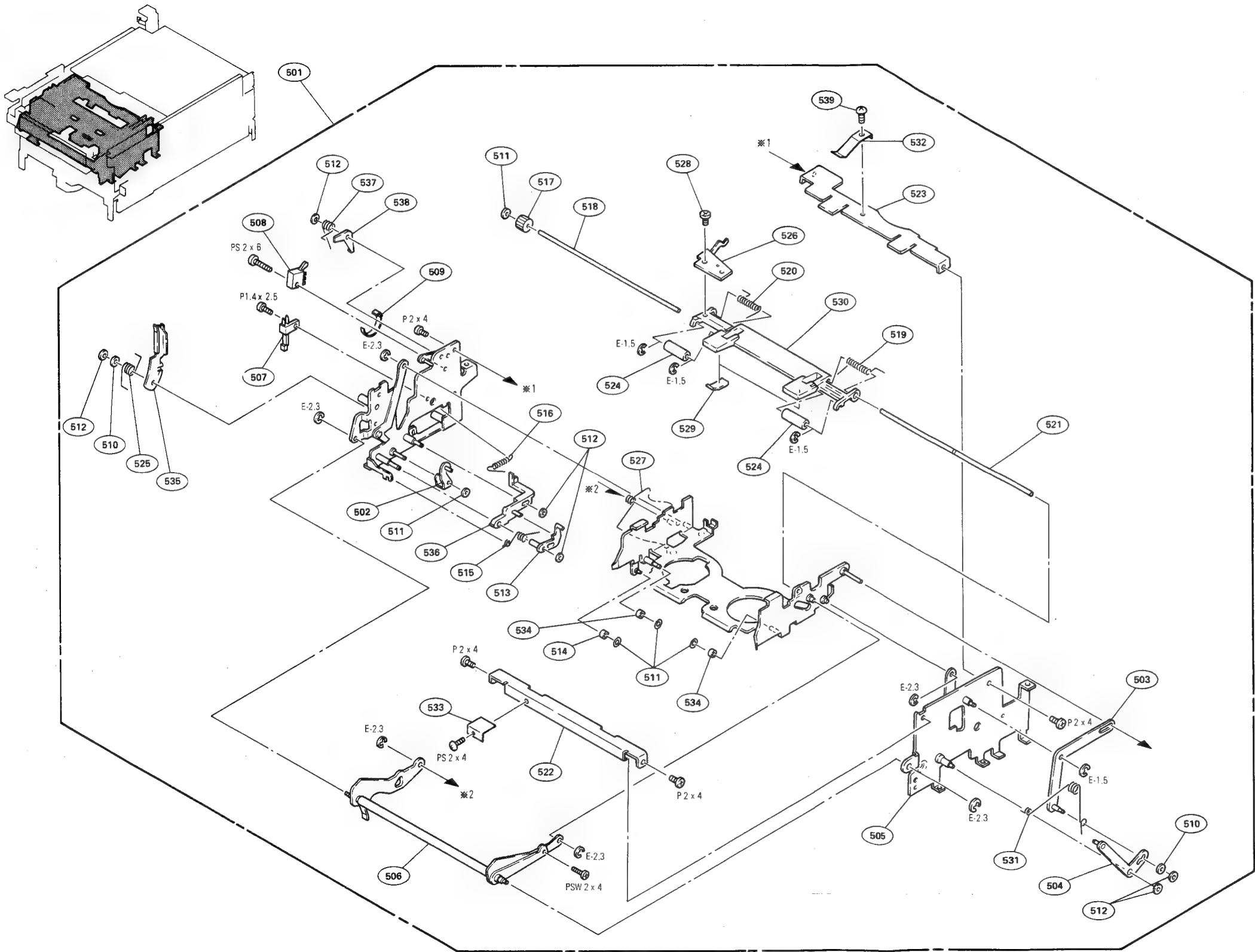


No.	Part No.	SP	Description
401	A-7070-627-A	o	MOUNTED CIRCUIT BOARD, TS-74 (RIGHT)
402	A-7070-628-A	o	MOUNTED CIRCUIT BOARD, TS-74 (LEFT)
403	X-3711-934-1	o	PLATE SUB ASSY, BLOCK
404	X-3711-935-3	s	SHAFT ASSY, WORM
405	X-3711-936-1	s	MOTOR ASSY, FL (CASSETTE LOADING)
406	X-3714-193-1	s	LEVER ASSY (B), GEAR
407	1-161-057-00	s	CAP, CERAMIC 0.033MF X
408	3-315-414-31	s	WASHER
409	3-669-465-00	s	WASHER (1.5), STOPPER
410	3-701-437-11	s	WASHER, POLY 2MM DIA., 0.25T
411	3-713-430-01	s	GEAR (B)
412	3-713-431-01	o	BRACKET, MOTOR
413	3-713-433-01	s	GEAR (A)
414	3-713-439-01	s	BEARING
415	3-713-441-01	o	SPRING, LEAF
416	3-713-452-01	s	GEAR (C)
417	3-724-140-01	o	BRACKET (LEFT)
418	3-724-141-01	o	BRACKET (RIGHT)
419	3-724-913-02	s	RACK

CASSETTE UP COMPARTMENT BLOCK (2)

CASSETTE UP COMPARTMENT BLOCK (2)

Cassette Up Compartment Block (2)

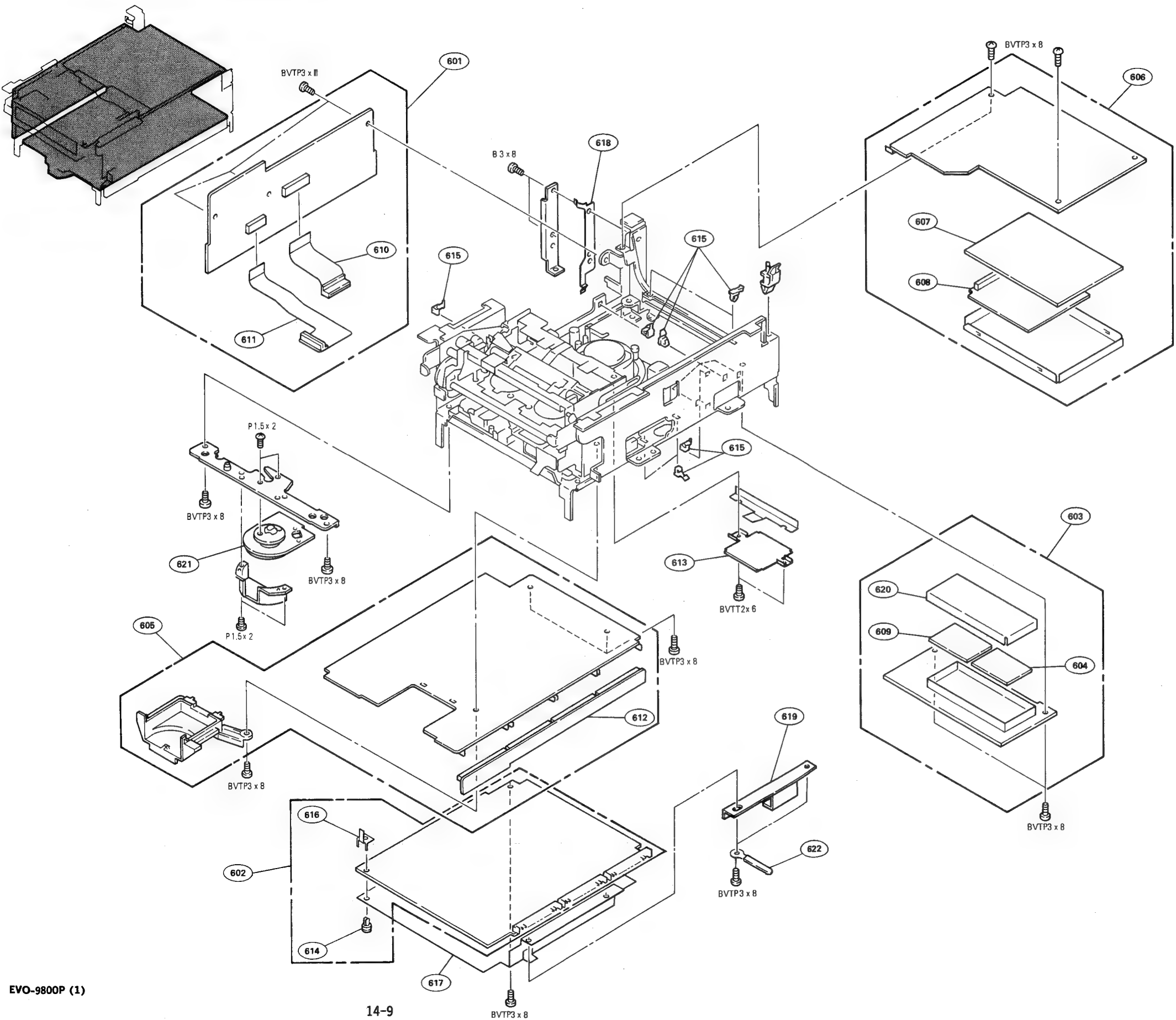


No.	Part No.	SP	Description
501	A-7090-645-A	s	CASSETTE COMPARTMENT BLOCK ASSY
502	X-3686-541-1	o	CLAW ASSY, LOCK
503	X-3711-930-1	s	LEVER ASSY, HOLDER
504	X-3711-931-4	s	LEVER ASSY, DOOR
505	X-3711-932-1	o	PLATE (R) ASSY, SIDE
506	X-3711-937-1	o	JOINT ASSY
507	1-553-226-00	s	SWITCH, LEAF (CASSETTE LOCK)
508	1-570-407-11	s	SWITCH, SLIDE (CASSETTE LOADING)
509	3-337-402-01	o	BAND, BINDING
510	3-533-073-01	s	WASHER
511	3-578-265-11	s	WASHER, STOPPER
512	3-669-465-00	s	WASHER (1.5), STOPPER
513	3-686-692-01	s	PREVENTION, SLIDER
514	3-686-693-01	o	ROLLER, LOCK
515	3-686-694-01	s	SPRING, TORTION
516	3-696-047-01	s	SPRING, TENSION
517	3-713-429-01	s	GEAR (D)
518	3-713-440-01	o	SHAFT, ROLLER
519	3-713-442-01	s	SPRING (RIGHT)
520	3-713-445-01	s	SPRING (LEFT)
521	3-713-457-01	o	SHAFT, JOINT
522	3-713-458-01	o	REINFORCEMENT
523	3-713-462-03	o	STOPPER, HOLDER
524	3-713-466-01	s	ROLLER
525	3-713-488-01	s	SPRING (2), TORSION
526	3-724-912-01	s	PLATE, FUNCTION, LEVER
527	3-713-620-01	s	SPRING (1), TORSION
528	3-713-622-01	s	SCREW (M1.3X4), TAPPING, 0
529	3-713-625-01	s	SHOE, BRAKE
530	3-713-626-01	s	COVER, MULTI
531	3-713-628-01	s	SPRING, TORSION
532	3-713-658-01	s	SPRING
533	3-716-921-01	s	SPRING, LEAF
534	3-719-590-01	s	ROLLER, ASSIST
535	3-721-125-01	s	LEVER, LOCK
536	3-721-136-01	s	SLIDER, LOCK
537	3-721-163-01	s	SPRING
538	3-721-166-01	s	LEVER, SWITCH
539	3-739-116-01	s	SCREW (2X3), +PS

PRINTED CIRCUIT BOARDS BLOCK (MECHANICAL DECK)

PRINTED CIRCUIT BOARDS BLOCK (MECHANICAL DECK)

Printed Circuit Boards Block (Mechanical Deck)

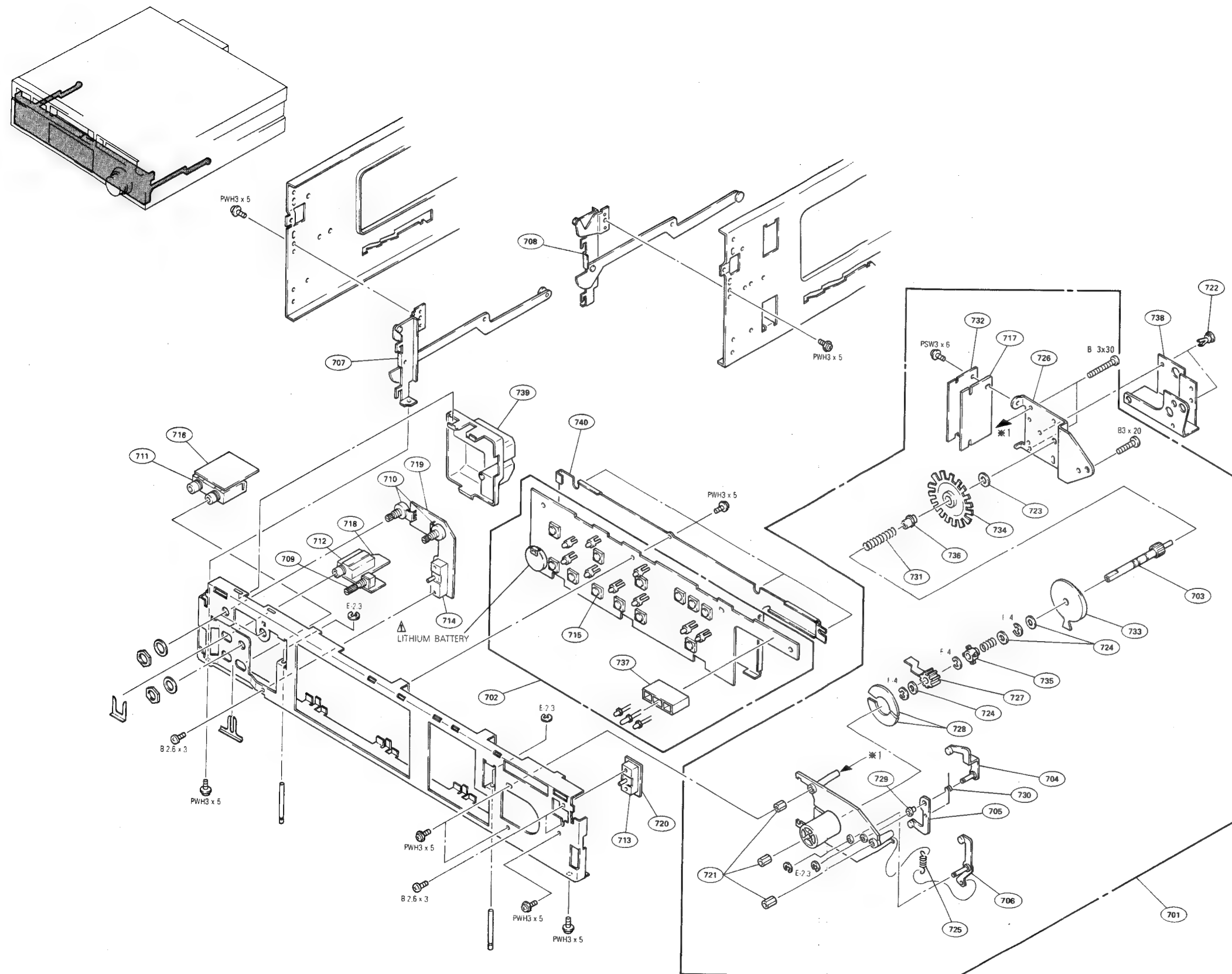


No.	Part No.	SP	Description
601	A-7062-168-A	o	MOUNTED CIRCUIT BOARD, MD-23 (P)
602	A-7062-164-A	o	MOUNTED CIRCUIT BOARD, HK-5
603	A-7062-165-A	o	MOUNTED CIRCUIT BOARD, FR-43
604	A-7062-166-A	o	MOUNTED CIRCUIT BOARD, RP-103
605	A-7062-167-A	o	MOUNTED CIRCUIT BOARD, SE-10 (P)
606	A-7061-824-A	o	MOUNTED CIRCUIT BOARD, MB-19
607	A-7061-825-A	o	MOUNTED CIRCUIT BOARD, PD-19
608	A-7061-826-A	s	MOUNTED CIRCUIT BOARD, PA-27
609	A-7061-827-A	o	MOUNTED CIRCUIT BOARD, RP-73 (LP)
610	A-7070-624-A	o	FP-84 FLEXIBLE BOARD
611	A-7070-625-A	o	FP-122 FLEXIBLE BOARD
612	A-7070-955-A	o	MOUNTED CIRCUIT BOARD, IG-4
613	X-3691-922-1	o	COVER ASSY, FLEXIBLE
614	3-531-576-01	s	RIVET
615	3-671-150-11	o	CLAMP
616	3-724-107-01	o	RETAINER, PC BOARD
617	3-724-175-01	o	PLATE, SHIELD, CORE
618	3-724-199-01	o	PLATE, SUPPORT, MB
619	3-738-954-01	o	STOPPER, HK
620	3-739-102-01	o	LID (H), UPPER, FR SHIELD CASE
621	8-835-304-11	s	MOTOR, DC (U-11B) (REEL MOTOR)
622	3-701-822-00	o	HOLDER, WIRE

FUNCTION CONTROL CHASSIS BLOCK

FUNCTION CONTROL CHASSIS BLOCK

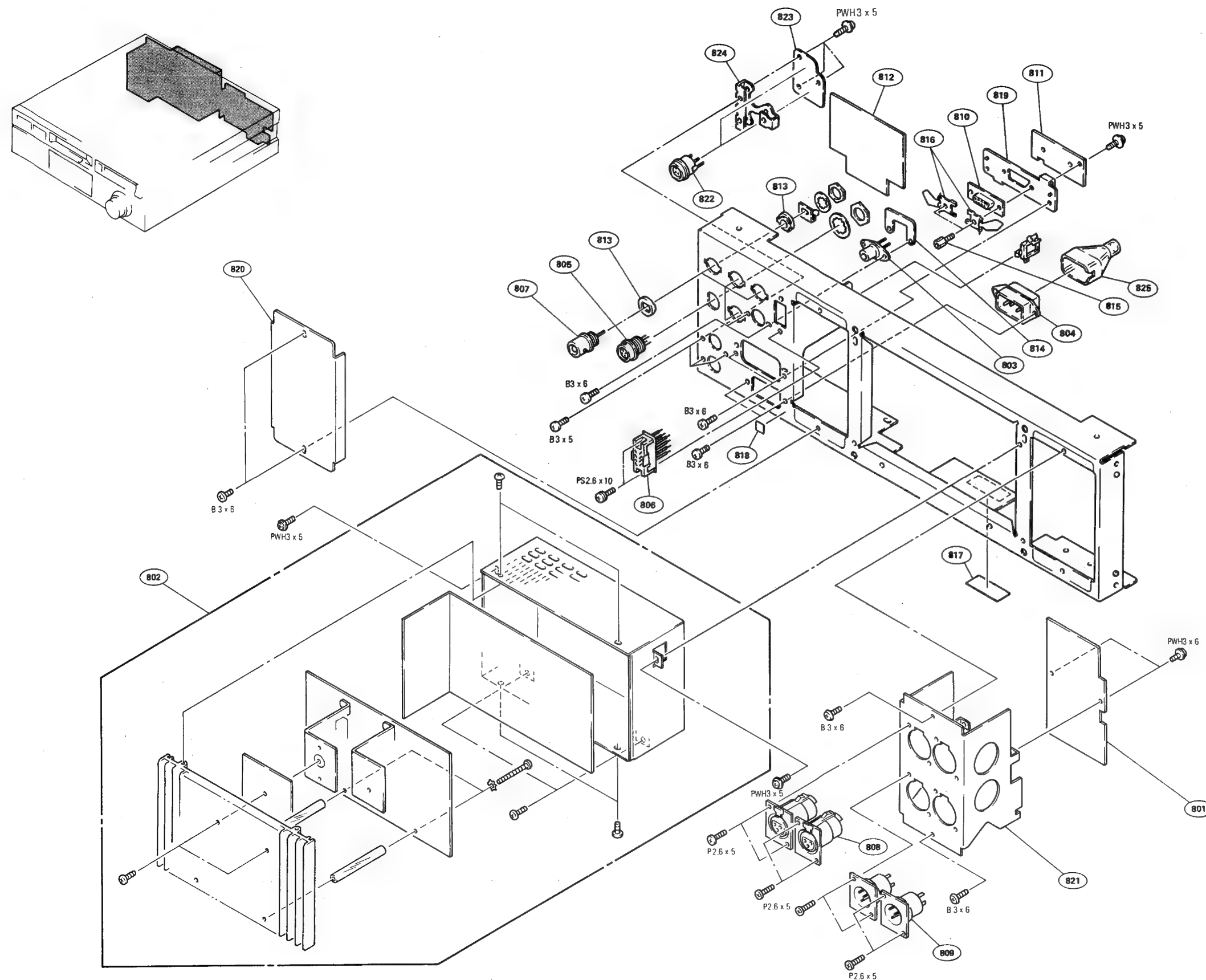
Function Control Chassis Block



No.	Part No.	SP	Description
701	A-6734-238-C	s	DIAL BLOCK ASSY, SERCH
702	A-7061-779-A	o	MOUNTED CIRCUIT BOARD, KY-162
703	X-3717-226-1	o	SHAFT SUB ASSY, MAIN
704	X-3717-227-1	o	ARM (RIGHT) ASSY, S10
705	X-3717-228-1	o	ARM (LEFT) ASSY, S10
706	X-3717-229-1	o	ARM ASSY, RETURN
707	X-3738-903-1	o	HINGE (LEFT) ASSY
708	X-3738-904-1	o	HINGE (RIGHT) ASSY
709	1-237-703-11	s	RES, VAR, CARBON 2K/2K
710	1-238-483-11	s	RES, VAR, CARBON 5K
711	1-507-797-21	s	JACK, LARGE TYPE 2P
712	1-507-854-00	s	JACK, LARGE TYPE
713	1-516-961-00	s	SWITCH, LEVER SLIDE
714	1-516-963-00	s	SWITCH, LEVER SLIDE
715	1-552-539-00	s	SWITCH, KEY BOARD
716	1-622-222-11	o	PRINTED CIRCUIT BOARD, MC-28
717	1-622-638-11	o	PRINTED CIRCUIT BOARD, PTC-32
718	1-629-477-11	o	PRINTED CIRCUIT BOARD, HP-42
719	1-631-793-11	o	PRINTED CIRCUIT BOARD, SW-346
720	1-631-795-11	o	PRINTED CIRCUIT BOARD, SW-348
721	2-280-622-11	o	SUPPORT (M3), HEXAGON
722	3-531-576-01	s	RIVET
723	3-662-048-00	s	WASHER, BRACKET
724	3-701-443-21	s	WASHER, POLY 5MM DIA., 0.50T
725	3-701-788-XX	s	SPRING, TENSION (15T)
726	3-717-315-01	o	PLATE, BOTTOM, SD
727	3-717-316-03	o	GUIDE, LOCK IN
728	3-717-317-01	o	PLATE, CLUTCH
729	3-717-318-01	o	BEARING, S10
730	3-717-319-01	o	SPRING, TORSION
731	3-717-320-01	o	SPRING, COMPRESSION
732	3-717-321-01	o	PROTECTOR, PTC
733	3-717-417-01	o	CAM
734	3-717-418-01	o	PLATE
735	3-717-546-02	o	GUIDE, LOCK OUT
736	3-717-553-01	o	BEARING, SD
737	3-718-657-01	o	HOLDER, LED
738	3-718-771-01	o	COVER (U), SD
739	3-738-914-01	o	PROTECTOR, MH
740	3-738-933-01	o	PROTECTOR, KY

CONNECTOR PANEL BLOCK CONNECTOR PANEL BLOCK

Connector Panel Block



No.	Part No.	SP	Description
801	A-6713-363-A	o	MOUNTED CIRCUIT BOARD, AA-16
802	1-413-249-12	o	SWITCHING REGULATOR (UR-14E)
803	1-507-467-00	s	1P PIN JACK
804	1-560-222-11	s	INLET 3P
805	1-561-045-21	s	CONNECTOR, (R-F)
806	1-561-577-21	s	CONNECTOR (DIP TYPE) 8P
807	1-562-227-21	o	RECEPTACLE, BNC
808	1-563-029-21	s	CONNECTOR (RECEPTACLE) 3P
809	1-563-030-21	s	CONNECTOR (RECEPTACLE) 3P
810	1-563-890-21	s	SOCKET, D-SUB CONNECTOR 9P
811	1-635-086-11	o	PRINTED CIRCUIT BOARD, RM-83
812	1-631-807-11	o	PRINTED CIRCUIT BOARD, CP-141
813	3-654-545-00	s	SPACER, BNC
814	3-661-147-00	o	NUT, PLATE
815	3-668-459-11	o	SCREW, CONNECTOR
816	3-668-460-00	o	SPRING
817	3-703-043-31	o	LABEL, MAIN CAUTION
818	3-703-082-21	s	LABEL, CAUTION
819	3-738-955-01	o	BRACKET (P), 9P
820	3-733-627-01	o	COVER, IF
821	3-733-641-01	o	BRACKET, XLR
822	1-566-850-31	s	CONNECTOR, (S) TERMINAL 4P
823	1-635-085-11	o	PRINTED CIRCUIT BOARD, CP-162
824	3-738-958-01	o	BRACKET, S
825	4-601-466-11	s	COVER, 3P INLET

PRINTED CIRCUIT BOARDS

Exploded view diagram of the EVO-9800P (1) chassis assembly. The diagram illustrates the internal components and their assembly points, including the power supply, cooling fan, and drive bays. Key dimensions and part numbers are indicated throughout the assembly.

Part Numbers List:

- No. 901
- 902
- 903
- 904
- 905
- 906
- 907
- 908
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- 910
- 911
- 912
- 913
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- 937

Dimensions and Specifications:

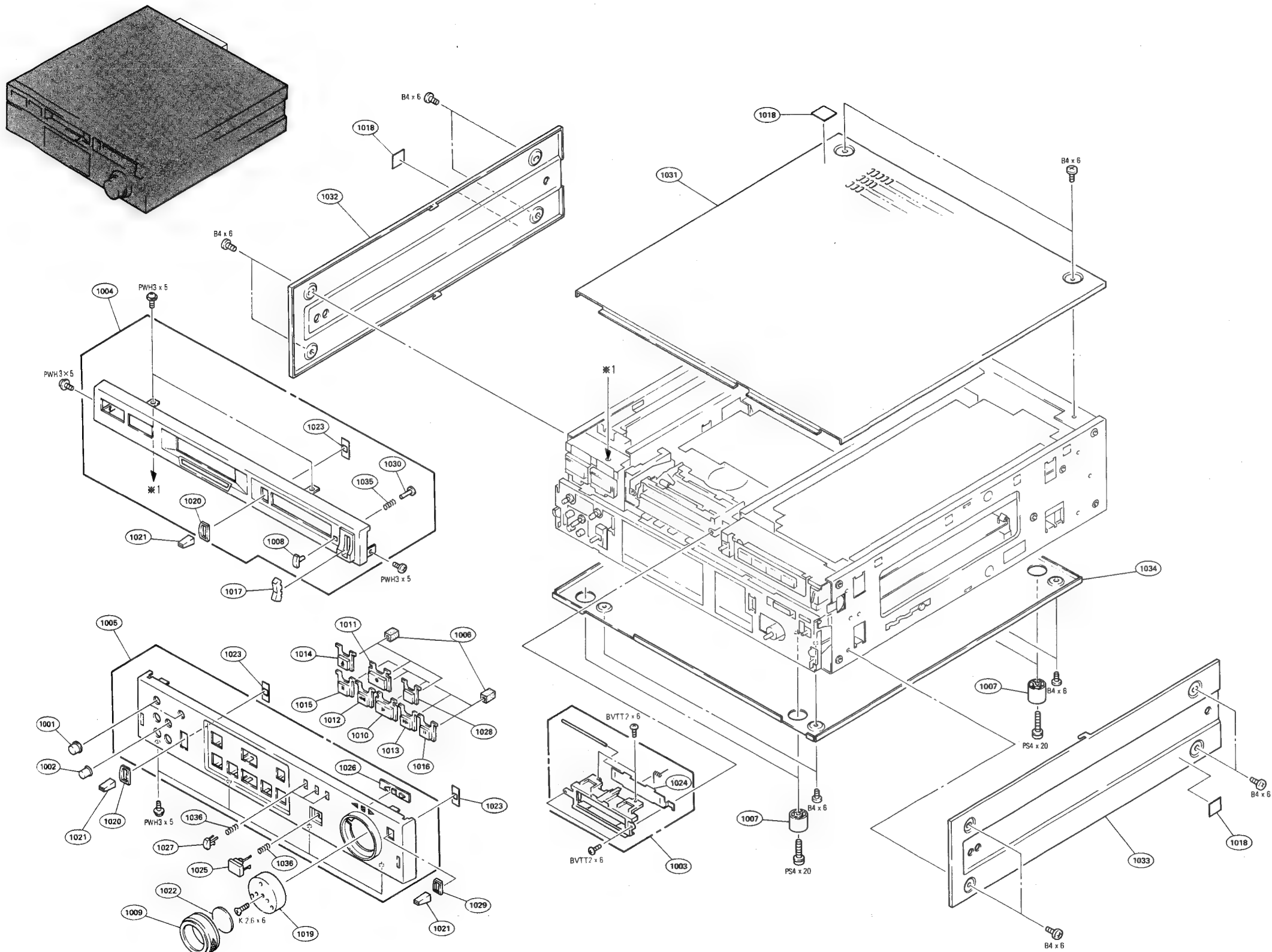
- PWH 3 x 5
- PWH 3 x 6
- PWH 3 x 8
- PSW 2.6 x 8
- PSW 3 x 30
- PSW 3 x 5
- PSW 3 x 6
- PSW 3 x 8
- PSW 3 x 10
- PSW 3 x 12
- PSW 3 x 14
- PSW 3 x 16
- PSW 3 x 18
- PSW 3 x 20
- PSW 3 x 22
- PSW 3 x 24
- PSW 3 x 26
- PSW 3 x 28
- PSW 3 x 30
- PSW 3 x 32
- PSW 3 x 34
- PSW 3 x 36
- PSW 3 x 38
- PSW 3 x 40
- PSW 3 x 42
- PSW 3 x 44
- PSW 3 x 46
- PSW 3 x 48
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- PSW 3 x 80
- PSW 3 x 82
- PSW 3 x 84
- PSW 3 x 86
- PSW 3 x 88
- PSW 3 x 90
- PSW 3 x 92
- PSW 3 x 94
- PSW 3 x 96
- PSW 3 x 98
- PSW 3 x 100

14-12

ORNAMENTAL PANEL BLOCK

ORNAMENTAL PANEL BLOCK

Ornamental Panel Block



No.	Part No.	SP	Description
1001	X-3661-073-0	s	KNOB ASSY, CONTROL
1002	X-3668-075-0	s	KNOB ASSY, CONTROL
1003	X-3738-905-1	o	WINDOW ASSY
1004	X-3738-908-1	o	FRONT PANEL (P) ASSY
1005	X-3738-907-1	o	KEY PANEL ASSY
1006	2-284-744-00	o	CUSHION (B), KEY
1007	3-642-656-01	s	LEG
1008	3-668-008-02	s	PUSH BUTTON (3X5)
1009	3-668-012-00	s	RUBBER, DIAL KNOB
1010	3-672-782-02	s	KEY TOP (A) 'PLAY'
1011	3-672-782-11	s	KEY TOP (A) 'REC'
1012	3-672-783-02	s	KEY TOP (B) 'REW'
1013	3-672-783-12	s	KEY TOP (B) 'F FWD'
1014	3-672-783-32	s	KEY TOP (B) 'EJECT'
1015	3-672-783-42	s	KEY TOP (B) 'STOP'
1016	3-672-783-52	s	KEY TOP (B) 'PAUSE'
1017	3-688-814-01	s	CAP, SWITCH
1018	3-703-082-21	s	LABEL, CAUTION
1019	3-717-370-01	o	KNOB, DIAL
1020	3-717-374-01	o	FRAME (23X12), ORNAMENTAL, SW
1021	3-717-382-01	s	KNOB, LEVER SW
1022	3-717-557-01	o	PLATE, KNOB
1023	3-717-613-01	o	PLATE ORNAMENTAL. LSW
1024	3-721-101-71	o	DOOR
1025	3-733-602-01	s	KEY TOP (S)
1026	3-733-605-01	s	COVER, LED
1027	3-733-606-01	s	PUSH BUTTON (5X9)
1028	3-738-906-01	s	KEY TOP (TR)
1029	3-738-907-01	s	FRAME, ORNAMENTAL, LEVER SW
1030	3-738-912-01	s	PIN (9), PUSH BUTTON
1031	3-738-924-02	o	PLATE, TOP
1032	3-738-925-03	o	PLATE (LEFT), SIDE
1033	3-738-926-03	o	PLATE (RIGHT), SIDE
1034	3-738-927-01	o	PLATE, BOTTOM
1035	4-309-349-00	s	SPRING
1036	4-866-613-00	s	SPRING, COMPRESSION



14-3. ELECTRICAL PARTS LIST

CAPACITOR, CHIP CERAMIC

Part No. SP Description

1-163-083-00	s CAP, CHIP CERAMIC	1pF	+0.25pF	50V
1-163-085-00	s CAP, CHIP CERAMIC	2pF	+0.25pF	50V
1-163-087-00	s CAP, CHIP CERAMIC	4pF	+0.25pF	50V
1-163-089-00	s CAP, CHIP CERAMIC	6pF	+0.5pF	50V
1-163-091-00	s CAP, CHIP CERAMIC	8pF	+0.5pF	50V
1-163-093-00	s CAP, CHIP CERAMIC	10pF	5%	50V
1-163-097-00	s CAP, CHIP CERAMIC	15pF	5%	50V
1-163-101-00	s CAP, CHIP CERAMIC	22pF	5%	50V
1-163-105-00	s CAP, CHIP CERAMIC	33pF	5%	50V
1-163-109-00	s CAP, CHIP CERAMIC	47pF	5%	50V
1-163-113-00	s CAP, CHIP CERAMIC	68pF	5%	50V
1-163-117-00	s CAP, CHIP CERAMIC	100pF	5%	50V
1-163-121-00	s CAP, CHIP CERAMIC	150pF	5%	50V
1-163-125-00	s CAP, CHIP CERAMIC	220pF	5%	50V
1-163-129-00	s CAP, CHIP CERAMIC	330pF	5%	50V
1-163-133-00	s CAP, CHIP CERAMIC	470pF	5%	50V
1-163-137-00	s CAP, CHIP CERAMIC	680pF	5%	50V
1-163-141-00	s CAP, CHIP CERAMIC	1000pF	5%	50V
1-163-145-00	s CAP, CHIP CERAMIC	1500pF	10%	50V
1-163-013-00	s CAP, CHIP CERAMIC	2200pF	10%	50V
1-163-015-00	s CAP, CHIP CERAMIC	3300pF	10%	50V
1-163-017-00	s CAP, CHIP CERAMIC	4700pF	10%	50V
1-163-019-00	s CAP, CHIP CERAMIC	6800pF	10%	50V
1-163-021-00	s CAP, CHIP CERAMIC	0.01	10%	50V
1-163-023-00	s CAP, CHIP CERAMIC	0.015	10%	50V
1-163-034-00	s CAP, CHIP CERAMIC	0.033		50V
1-163-035-00	s CAP, CHIP CERAMIC	0.047		50V
1-163-036-00	s CAP, CHIP CERAMIC	0.068		50V
1-163-038-00	s CAP, CHIP CERAMIC	0.1		50V

CAPACITOR, ELECTROLYTIC

Part No. SP Description

1-124-902-00	s CAP, ELECT	0.47	20%	50V
1-124-791-11	s CAP, ELECT	1.0	20%	100V
1-124-925-11	s CAP, ELECT	2.2	20%	100V
1-123-382-00	s CAP, ELECT	3.3	20%	100V
1-124-927-00	s CAP, ELECT	4.7	20%	100V
1-123-875-91	s CAP, ELECT	10	20%	50V
1-124-915-11	s CAP, ELECT	10	20%	63V
1-124-667-11	s CAP, ELECT	10	20%	100V
1-124-908-11	s CAP, ELECT	22	20%	50V
1-124-916-11	s CAP, ELECT	22	20%	63V
1-124-929-11	s CAP, ELECT	22	20%	100V
1-124-963-11	s CAP, ELECT	33	20%	16V
1-124-482-11	s CAP, ELECT	33	20%	35V
1-124-917-11	s CAP, ELECT	33	20%	63V
1-124-930-11	s CAP, ELECT	33	20%	100V
1-124-446-11	s CAP, ELECT	47	20%	10V
1-124-477-11	s CAP, ELECT	47	20%	25V
1-124-910-11	s CAP, ELECT	47	20%	50V
1-124-918-11	s CAP, ELECT	47	20%	63V
1-124-931-11	s CAP, ELECT	47	20%	100V
1-124-443-00	s CAP, ELECT	100	20%	10V
1-126-101-11	s CAP, ELECT	100	20%	16V
1-124-478-11	s CAP, ELECT	100	20%	25V
1-124-122-11	s CAP, ELECT	100	20%	50V
1-124-572-11	s CAP, ELECT	100	20%	63V
1-123-605-00	s CAP, ELECT	100	20%	100V
1-124-444-00	s CAP, ELECT	220	20%	10V
1-124-120-11	s CAP, ELECT	220	20%	25V
1-124-484-11	s CAP, ELECT	220	20%	35V
1-124-911-11	s CAP, ELECT	220	20%	50V
1-124-919-51	s CAP, ELECT	220	20%	63V
1-124-628-11	s CAP, ELECT	220	20%	100V
1-124-442-00	s CAP, ELECT	330	20%	6.3V
1-124-604-00	s CAP, ELECT	330	20%	10V
1-124-119-00	s CAP, ELECT	330	20%	16V
1-124-479-11	s CAP, ELECT	330	20%	25V
1-124-485-11	s CAP, ELECT	330	20%	35V
1-124-912-11	s CAP, ELECT	330	20%	50V
1-124-472-11	s CAP, ELECT	470	20%	10V
1-124-475-11	s CAP, ELECT	470	20%	16V
1-124-480-11	s CAP, ELECT	470	20%	25V
1-126-104-11	s CAP, ELECT	470	20%	35V
1-124-913-11	s CAP, ELECT	470	20%	50V
1-124-921-11	s CAP, ELECT	470	20%	63V
1-124-471-00	s CAP, ELECT	1000	20%	6.3V
1-124-473-11	s CAP, ELECT	1000	20%	10V
1-124-555-00	s CAP, ELECT	1000	20%	16V
1-124-557-11	s CAP, ELECT	1000	20%	25V
1-126-105-11	s CAP, ELECT	1000	20%	35V
1-124-637-11	s CAP, ELECT	1000	20%	50V
1-124-922-11	s CAP, ELECT	1000	20%	63V
1-124-893-11	s CAP, ELECT	2200	20%	10V
1-124-556-11	s CAP, ELECT	2200	20%	16V
1-124-563-11	s CAP, ELECT	2200	20%	25V
1-124-618-11	s CAP, ELECT	2200	20%	35V
1-124-607-11	s CAP, ELECT	2200	20%	50V
1-124-621-11	s CAP, ELECT	3300	20%	6.3V
1-124-887-00	s CAP, ELECT	3300	20%	16V
1-124-636-00	s CAP, ELECT	3300	20%	25V
1-124-762-00	s CAP, ELECT	4700	20%	10V

(CAPACITOR, ELECTROLYTIC)

Part No. SP Description

1-124-898-11 s CAP, ELECT 4700 20% 16V
 1-124-564-11 s CAP, ELECT 4700 20% 25V
 1-124-891-11 s CAP, ELECT 10000 20% 6.3V
 1-124-763-00 s CAP, ELECT 10000 20% 10V
 1-124-902-00 s CAP, ELECT 0.47 20% 50V

1-124-791-11 s CAP, ELECT 1.0 20% 100V
 1-124-925-11 s CAP, ELECT 2.2 20% 100V
 1-123-382-00 s CAP, ELECT 3.3 20% 100V
 1-124-927-00 s CAP, ELECT 4.7 20% 100V
 1-123-875-91 s CAP, ELECT 10 20% 50V

1-124-908-11 s CAP, ELECT 22 20% 50V
 1-124-963-11 s CAP, ELECT 33 20% 16V
 1-124-482-11 s CAP, ELECT 33 20% 35V
 1-124-917-11 s CAP, ELECT 33 20% 63V
 1-124-446-11 s CAP, ELECT 47 20% 10V

1-124-477-11 s CAP, ELECT 47 20% 25V
 1-124-910-11 s CAP, ELECT 47 20% 50V
 1-124-443-00 s CAP, ELECT 100 20% 10V
 1-126-101-11 s CAP, ELECT 100 20% 16V
 1-124-478-11 s CAP, ELECT 100 20% 25V

1-124-122-11 s CAP, ELECT 100 20% 50V
 1-124-444-00 s CAP, ELECT 220 20% 10V
 1-124-120-11 s CAP, ELECT 220 20% 25V
 1-124-484-11 s CAP, ELECT 220 20% 35V
 1-124-911-11 s CAP, ELECT 220 20% 50V

1-124-442-00 s CAP, ELECT 330 20% 6.3V
 1-124-604-00 s CAP, ELECT 330 20% 10V
 1-124-119-00 s CAP, ELECT 330 20% 16V
 1-124-479-11 s CAP, ELECT 330 20% 25V
 1-124-485-11 s CAP, ELECT 330 20% 35V

1-124-912-11 s CAP, ELECT 330 20% 50V
 1-124-472-11 s CAP, ELECT 470 20% 10V
 1-124-475-11 s CAP, ELECT 470 20% 16V
 1-124-480-11 s CAP, ELECT 470 20% 25V
 1-126-104-11 s CAP, ELECT 470 20% 35V

1-124-913-11 s CAP, ELECT 470 20% 50V

RESISTOR, CHIP

Part No. SP Description

1-216-295-00 s RES, CHIP 0 5% 1/10W
 1-216-298-00 s RES, CHIP 2.2 5% 1/10W
 1-216-302-00 s RES, CHIP 2.7 5% 1/10W
 1-216-304-00 s RES, CHIP 3.3 5% 1/10W
 1-216-306-00 s RES, CHIP 3.9 5% 1/10W

1-216-308-00 s RES, CHIP 4.7 5% 1/10W
 1-216-309-00 s RES, CHIP 5.6 5% 1/10W
 1-216-311-00 s RES, CHIP 6.8 5% 1/10W
 1-216-313-00 s RES, CHIP 8.2 5% 1/10W
 1-216-001-00 s RES, CHIP 10 5% 1/10W

1-216-003-00 s RES, CHIP 12 5% 1/10W
 1-216-005-00 s RES, CHIP 15 5% 1/10W
 1-216-007-00 s RES, CHIP 18 5% 1/10W
 1-216-009-00 s RES, CHIP 22 5% 1/10W
 1-216-011-00 s RES, CHIP 27 5% 1/10W

1-216-013-00 s RES, CHIP 33 5% 1/10W
 1-216-015-00 s RES, CHIP 39 5% 1/10W
 1-216-017-00 s RES, CHIP 47 5% 1/10W
 1-216-019-00 s RES, CHIP 56 5% 1/10W
 1-216-021-00 s RES, CHIP 68 5% 1/10W

1-216-023-00 s RES, CHIP 82 5% 1/10W
 1-216-025-00 s RES, CHIP 100 5% 1/10W
 1-216-027-00 s RES, CHIP 120 5% 1/10W
 1-216-029-00 s RES, CHIP 150 5% 1/10W
 1-216-031-00 s RES, CHIP 180 5% 1/10W

1-216-033-00 s RES, CHIP 220 5% 1/10W
 1-216-035-00 s RES, CHIP 270 5% 1/10W
 1-216-037-00 s RES, CHIP 330 5% 1/10W
 1-216-039-00 s RES, CHIP 390 5% 1/10W
 1-216-041-00 s RES, CHIP 470 5% 1/10W

1-216-043-00 s RES, CHIP 560 5% 1/10W
 1-216-045-00 s RES, CHIP 680 5% 1/10W
 1-216-047-00 s RES, CHIP 820 5% 1/10W
 1-216-049-00 s RES, CHIP 1k 5% 1/10W
 1-216-051-00 s RES, CHIP 1.2k 5% 1/10W

1-216-053-00 s RES, CHIP 1.5k 5% 1/10W
 1-216-055-00 s RES, CHIP 1.8k 5% 1/10W
 1-216-057-00 s RES, CHIP 2.2k 5% 1/10W
 1-216-059-00 s RES, CHIP 2.7k 5% 1/10W
 1-216-061-00 s RES, CHIP 3.3k 5% 1/10W

1-216-063-00 s RES, CHIP 3.9k 5% 1/10W
 1-216-065-00 s RES, CHIP 4.7k 5% 1/10W
 1-216-067-00 s RES, CHIP 5.6k 5% 1/10W
 1-216-069-00 s RES, CHIP 6.8k 5% 1/10W
 1-216-071-00 s RES, CHIP 8.2k 5% 1/10W

1-216-073-00 s RES, CHIP 10k 5% 1/10W
 1-216-075-00 s RES, CHIP 12k 5% 1/10W
 1-216-077-00 s RES, CHIP 15k 5% 1/10W
 1-216-079-00 s RES, CHIP 18k 5% 1/10W
 1-216-081-00 s RES, CHIP 22k 5% 1/10W

1-216-083-00 s RES, CHIP 27k 5% 1/10W
 1-216-085-00 s RES, CHIP 33k 5% 1/10W
 1-216-087-00 s RES, CHIP 39k 5% 1/10W
 1-216-089-00 s RES, CHIP 47k 5% 1/10W
 1-216-091-00 s RES, CHIP 56k 5% 1/10W

1-216-093-00 s RES, CHIP 68k 5% 1/10W
 1-216-095-00 s RES, CHIP 82k 5% 1/10W
 1-216-097-00 s RES, CHIP 100k 5% 1/10W
 1-216-099-00 s RES, CHIP 120k 5% 1/10W
 1-216-101-00 s RES, CHIP 150k 5% 1/10W

(RESISTOR, CHIP)

Part No. SP Description

1-216-103-00 s RES, CHIP 180k 5% 1/10W
 1-216-105-00 s RES, CHIP 220k 5% 1/10W
 1-216-107-00 s RES, CHIP 270k 5% 1/10W
 1-216-109-00 s RES, CHIP 330k 5% 1/10W
 1-216-111-00 s RES, CHIP 390k 5% 1/10W

1-216-113-00 s RES, CHIP 470k 5% 1/10W
 1-216-115-00 s RES, CHIP 560k 5% 1/10W
 1-216-117-00 s RES, CHIP 680k 5% 1/10W
 1-216-119-00 s RES, CHIP 820k 5% 1/10W
 1-216-121-00 s RES, CHIP 1.0M 5% 1/10W

1-216-123-00 s RES, CHIP 1.2M 5% 1/10W
 1-216-125-00 s RES, CHIP 1.5M 5% 1/10W
 1-216-127-00 s RES, CHIP 1.8M 5% 1/10W
 1-216-129-00 s RES, CHIP 2.2M 5% 1/10W
 1-216-131-00 s RES, CHIP 2.7M 5% 1/10W

1-216-133-00 s RES, CHIP 3.3M 5% 1/10W

CONNECTOR

Part No. SP Description

1-506-467-11 o RECEPTACLE 2P MALE (STRAIGHT TYPE)
 1-506-481-11 o RECEPTACLE 2P MALE (ANGLE TYPE)
 1-562-147-11 o HOUSING 2P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-468-11 o RECEPTACLE 3P MALE (STRAIGHT TYPE)
 1-506-482-11 o RECEPTACLE 3P MALE (ANGLE TYPE)
 1-562-148-11 o HOUSING 3P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-469-11 o RECEPTACLE 4P MALE (STRAIGHT TYPE)
 1-506-483-21 o RECEPTACLE 4P MALE (ANGLE TYPE)
 1-562-149-11 o HOUSING 4P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-470-11 o RECEPTACLE 5P MALE (STRAIGHT TYPE)
 1-506-484-11 o RECEPTACLE 5P MALE (ANGLE TYPE)
 1-562-150-11 o HOUSING 5P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-471-31 o RECEPTACLE 6P MALE (STRAIGHT TYPE)
 1-506-485-11 o RECEPTACLE 6P MALE (ANGLE TYPE)
 1-562-151-11 o HOUSING 6P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-472-11 o RECEPTACLE 7P MALE (STRAIGHT TYPE)
 1-506-486-11 o RECEPTACLE 7P MALE (ANGLE TYPE)
 1-562-152-11 o HOUSING 7P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-473-11 o RECEPTACLE 8P MALE (STRAIGHT TYPE)
 1-506-487-11 o RECEPTACLE 8P MALE (ANGLE TYPE)
 1-562-153-11 o HOUSING 8P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-474-11 o RECEPTACLE 9P MALE (STRAIGHT TYPE)
 1-506-488-11 o RECEPTACLE 9P MALE (ANGLE TYPE)
 1-562-154-11 o HOUSING 9P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-475-11 o RECEPTACLE 10P MALE (STRAIGHT TYPE)
 1-506-489-11 o RECEPTACLE 10P MALE (ANGLE TYPE)
 1-562-155-11 o HOUSING 10P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-476-11 o RECEPTACLE 11P MALE (STRAIGHT TYPE)
 1-506-490-21 o RECEPTACLE 11P MALE (ANGLE TYPE)
 1-562-156-11 o HOUSING 11P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-477-11 o RECEPTACLE 12P MALE (STRAIGHT TYPE)
 1-506-491-11 o RECEPTACLE 12P MALE (ANGLE TYPE)
 1-562-157-11 o HOUSING 12P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

1-506-478-11 o RECEPTACLE 13P MALE (STRAIGHT TYPE)
 1-506-492-11 o RECEPTACLE 13P MALE (ANGLE TYPE)
 1-562-627-11 o HOUSING 13P
 1-563-088-11 o CONTACT AWG24-30
 1-563-089-11 o CONTACT AWG32

(CONNECTOR)

Part No. SP Description

1-506-479-11	o	RECEPTACLE	14P MALE (STRAIGHT TYPE)
1-506-493-11	o	RECEPTACLE	14P MALE (ANGLE TYPE)
1-562-185-11	o	HOUSING	14P
1-563-088-11	o	CONTACT	AWG24-30
1-563-089-11	o	CONTACT	AWG32
1-506-480-11	o	RECEPTACLE	15P MALE (STRAIGHT TYPE)
1-506-494-11	o	RECEPTACLE	15P MALE (ANGLE TYPE)
1-562-958-11	o	HOUSING	15P
1-563-088-11	o	CONTACT	AWG24-30
1-563-089-11	o	CONTACT	AWG32

INDUCTOR, MICRO

Part No. SP Description

1-408-876-00	s	INDUCTOR, MICRO	0.18	5%
1-408-877-00	s	INDUCTOR, MICRO	0.22	5%
1-408-878-00	s	INDUCTOR, MICRO	0.33	5%
1-408-879-21	s	INDUCTOR, MICRO	0.47	5%
1-408-931-00	s	INDUCTOR, MICRO	0.56	5%
1-408-880-00	s	INDUCTOR, MICRO	0.68	5%
1-408-763-00	s	INDUCTOR, MICRO	0.82	5%
1-408-397-00	s	INDUCTOR, MICRO	1.0	5%
1-408-398-00	s	INDUCTOR, MICRO	1.2	5%
1-408-399-00	s	INDUCTOR, MICRO	1.5	5%
1-408-400-00	s	INDUCTOR, MICRO	1.8	5%
1-408-401-00	s	INDUCTOR, MICRO	2.2	5%
1-408-402-00	s	INDUCTOR, MICRO	2.7	5%
1-408-403-00	s	INDUCTOR, MICRO	3.3	5%
1-408-404-00	s	INDUCTOR, MICRO	3.9	5%
1-408-405-00	s	INDUCTOR, MICRO	4.7	5%
1-408-406-00	s	INDUCTOR, MICRO	5.6	5%
1-408-407-00	s	INDUCTOR, MICRO	6.8	5%
1-408-408-00	s	INDUCTOR, MICRO	8.2	5%
1-408-409-00	s	INDUCTOR, MICRO	10	5%
1-408-410-00	s	INDUCTOR, MICRO	12	5%
1-408-411-00	s	INDUCTOR, MICRO	15	5%
1-408-412-00	s	INDUCTOR, MICRO	18	5%
1-408-413-00	s	INDUCTOR, MICRO	22	5%
1-408-414-00	s	INDUCTOR, MICRO	27	5%
1-408-415-00	s	INDUCTOR, MICRO	33	5%
1-408-416-00	s	INDUCTOR, MICRO	39	5%
1-408-417-21	s	INDUCTOR, MICRO	47	5%
1-408-418-00	s	INDUCTOR, MICRO	56	5%
1-408-419-00	s	INDUCTOR, MICRO	68	5%
1-408-420-00	s	INDUCTOR, MICRO	82	5%
1-408-421-00	s	INDUCTOR, MICRO	100	5%
1-408-422-00	s	INDUCTOR, MICRO	120	5%
1-408-423-00	s	INDUCTOR, MICRO	150	5%
1-408-424-00	s	INDUCTOR, MICRO	180	5%
1-408-425-00	s	INDUCTOR, MICRO	220	5%
1-408-426-00	s	INDUCTOR, MICRO	270	5%
1-408-427-00	s	INDUCTOR, MICRO	330	5%
1-408-428-00	s	INDUCTOR, MICRO	390	5%
1-408-429-00	s	INDUCTOR, MICRO	470	5%

AA-16 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-6713-363-A	o MOUNTED CIRCUIT BOARD, AA-16
C1	1-162-294-31	s CERAMIC 0.001uF 10% 50V
C12	1-162-207-31	s CERAMIC 22PF 5% 50V
C100	1-126-103-11	s ELECT 470uF 20% 16V
C101	1-162-294-31	s CERAMIC 0.001uF 10% 50V
C112	1-162-207-31	s CERAMIC 22PF 5% 50V
C150	1-161-379-00	s CERAMIC 0.01uF 20% 25V
D10	8-719-911-19	s DIODE 1SS119
D11	8-719-911-19	s DIODE 1SS119
D110	8-719-911-19	s DIODE 1SS119
D111	8-719-911-19	s DIODE 1SS119
D150	8-719-109-93	s DIODE RD6.2ES-B2
IC101	8-759-981-98	s IC RC4560DD
PS1	1-532-727-11	s LINK, IC 0.25A
Q10	8-729-306-92	s TRANSISTOR 2SD669A
Q11	8-729-304-92	s TRANSISTOR 2SB649A
Q12	8-729-201-05	s TRANSISTOR 2SC2878-B
Q110	8-729-306-92	s TRANSISTOR 2SD669A
Q111	8-729-304-92	s TRANSISTOR 2SB649A
Q112	8-729-201-05	s TRANSISTOR 2SC2878-B
R1	1-247-826-00	s CARBON 620 5% 1/4W
R2	1-249-394-11	s CARBON 12 5% 1/4W
R3	1-249-426-11	s CARBON 5.6K 5% 1/4W
R4	1-249-426-11	s CARBON 5.6K 5% 1/4W
R5	1-249-415-11	s CARBON 680 5% 1/4W
R6	1-249-413-11	s CARBON 470 5% 1/4W
R7	1-249-418-11	s CARBON 1.2K 5% 1/4W
R8	1-249-427-11	s CARBON 6.8K 5% 1/4W
R10	1-249-417-11	s CARBON 1K 5% 1/4W
R11	1-249-426-11	s CARBON 5.6K 5% 1/4W
R12	1-249-437-11	s CARBON 47K 5% 1/4W
R13	1-249-429-11	s CARBON 10K 5% 1/4W
R14	1-249-429-11	s CARBON 10K 5% 1/4W
R15	1-249-393-11	s CARBON 10 5% 1/4W
R16	1-249-417-11	s CARBON 1K 5% 1/4W
R17	1-249-417-11	s CARBON 1K 5% 1/4W
R18	1-249-478-11	s CARBON 2.2 5% 1/2W
R19	1-249-478-11	s CARBON 2.2 5% 1/2W
R20	1-249-389-11	s CARBON 4.7 5% 1/4W
R21	1-249-417-11	s CARBON 1K 5% 1/4W
R101	1-247-826-00	s CARBON 620 5% 1/4W
R102	1-249-394-11	s CARBON 12 5% 1/4W
R103	1-249-426-11	s CARBON 5.6K 5% 1/4W
R104	1-249-426-11	s CARBON 5.6K 5% 1/4W
R105	1-249-415-11	s CARBON 680 5% 1/4W
R106	1-249-413-11	s CARBON 470 5% 1/4W
R107	1-249-418-11	s CARBON 1.2K 5% 1/4W
R108	1-249-427-11	s CARBON 6.8K 5% 1/4W
R110	1-249-417-11	s CARBON 1K 5% 1/4W
R111	1-249-426-11	s CARBON 5.6K 5% 1/4W
R112	1-249-437-11	s CARBON 47K 5% 1/4W
R113	1-249-429-11	s CARBON 10K 5% 1/4W
R114	1-249-429-11	s CARBON 10K 5% 1/4W
R115	1-249-393-11	s CARBON 10 5% 1/4W
R116	1-249-417-11	s CARBON 1K 5% 1/4W

(AA-16 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R117	1-249-417-11	s CARBON 1K 5% 1/4W
R118	1-249-478-11	s CARBON 2.2 5% 1/2W
R119	1-249-478-11	s CARBON 2.2 5% 1/2W
R120	1-249-389-11	s CARBON 4.7 5% 1/4W
R121	1-249-417-11	s CARBON 1K 5% 1/4W
R150	1-249-417-11	s CARBON 1K 5% 1/4W
T1	1-423-261-11	s TRANSFORMER, INPUT
T10	1-427-586-11	s TRANSFORMER, INPUT/OUTPUT
T101	1-423-261-11	s TRANSFORMER, INPUT
T110	1-427-586-11	s TRANSFORMER, INPUT/OUTPUT

AC-89 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	Δ1-622-786-11	o PRINTED CIRCUIT BOARD, AC-89
C1	1-136-211-00	s FILM 0.022uF 20% 250V
C2	1-136-185-00	s FILM 0.22uF 20% 250V
CN1	Δ1-506-371-00	o CONNECTOR, 2P, MALE
F1	Δ1-533-189-11	o HOLDER, FUSE
L1	1-421-556-21	s FILTER, LINE
R1	1-214-937-00	s METAL 1M 1% 1/2W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

AU-127 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7061-778-A	o MOUNTED CIRCUIT BOARD, AU-127
1pc	7-682-903-01	s SCREW +PWH 3X5
C1	1-124-360-00	s ELECT 1000uF 20% 16V
C2	1-126-233-11	s ELECT 22uF 20% 50V
C3	1-126-103-11	s ELECT 470uF 20% 16V
C101	1-130-471-00	s MYLAR 0.001uF 5% 50V
C102	1-123-875-11	s ELECT 10uF 20% 50V
C103	1-123-875-11	s ELECT 10uF 20% 50V
C104	1-123-875-11	s ELECT 10uF 20% 50V
C105	1-161-051-00	s CERAMIC 0.01uF 10% 50V
C113	1-123-875-11	s ELECT 10uF 20% 50V
C115	1-107-202-00	s MICA 10PF 5% 500V
C116	1-161-051-00	s CERAMIC 0.01uF 10% 50V
C119	1-123-875-11	s ELECT 10uF 20% 50V
C120	1-161-055-00	s CERAMIC 0.022uF 10% 50V
C121	1-161-055-00	s CERAMIC 0.022uF 10% 50V
C201	1-130-471-00	s MYLAR 0.001uF 5% 50V
C202	1-123-875-11	s ELECT 10uF 20% 50V
C203	1-123-875-11	s ELECT 10uF 20% 50V
C204	1-123-875-11	s ELECT 10uF 20% 50V
C205	1-161-051-00	s CERAMIC 0.01uF 10% 50V
C213	1-123-875-11	s ELECT 10uF 20% 50V
C215	1-107-202-00	s MICA 10PF 5% 500V
C216	1-161-051-00	s CERAMIC 0.01uF 10% 50V
C219	1-123-875-11	s ELECT 10uF 20% 50V
C220	1-161-055-00	s CERAMIC 0.022uF 10% 50V
C221	1-161-494-00	s CERAMIC 0.022uF 25V
C301	1-123-875-11	s ELECT 10uF 20% 50V
C303	1-123-875-11	s ELECT 10uF 20% 50V
C304	1-123-875-11	s ELECT 10uF 20% 50V
C305	1-123-875-11	s ELECT 10uF 20% 50V
C359	1-161-021-11	s CERAMIC 0.047uF 10% 25V
C364	1-107-202-00	s MICA 10PF 5% 500V
C401	1-161-051-00	s CERAMIC 0.01uF 10% 50V
C402	1-124-927-11	s ELECT 4.7uF 20% 100V
C405	1-107-202-00	s MICA 10PF 5% 500V
C406	1-161-494-00	s CERAMIC 0.022uF 25V
C407	1-161-021-11	s CERAMIC 0.047uF 10% 25V
C501	1-161-051-00	s CERAMIC 0.01uF 10% 50V
C502	1-124-927-11	s ELECT 4.7uF 20% 100V
C505	1-107-208-00	s MICA 18PF 5% 500V
C506	1-161-494-00	s CERAMIC 0.022uF 25V
C507	1-161-021-11	s CERAMIC 0.047uF 10% 25V
C604	1-123-875-11	s ELECT 10uF 20% 50V
C704	1-123-875-11	s ELECT 10uF 20% 50V
C804	1-130-497-00	s MYLAR 0.15uF 5% 50V
C904	1-130-497-00	s MYLAR 0.15uF 5% 50V
C909	1-123-875-11	s ELECT 10uF 20% 50V
CN208	1-506-471-11	s CONNECTOR, 6P, MALE
CN211	1-506-471-11	s CONNECTOR, 6P, MALE
D1	8-719-109-93	s DIODE RD6.2ES-B2
D2	8-719-109-57	s DIODE RD2.4ES-B2
D4	8-719-200-02	s DIODE 10E2
D5	8-719-200-02	s DIODE 10E2
D8	8-719-200-02	s DIODE 10E2
D9	8-719-200-02	s DIODE 10E2
D11	8-719-911-19	s DIODE 1SS119

(AU-127 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D101	8-719-911-19	s DIODE 1SS119
D102	8-719-109-93	s DIODE RD6.2ES-B2
D103	8-719-911-19	s DIODE 1SS119
D104	8-719-911-19	s DIODE 1SS119
D106	8-719-911-19	s DIODE 1SS119
D107	8-719-109-93	s DIODE RD6.2ES-B2
D201	8-719-911-19	s DIODE 1SS119
D202	8-719-109-93	s DIODE RD6.2ES-B2
D203	8-719-911-19	s DIODE 1SS119
D204	8-719-911-19	s DIODE 1SS119
D206	8-719-911-19	s DIODE 1SS119
D207	8-719-109-93	s DIODE RD6.2ES-B2
D351	8-719-911-19	s DIODE 1SS119
D352	8-719-911-19	s DIODE 1SS119
D354	8-719-911-19	s DIODE 1SS119
D401	8-719-109-93	s DIODE RD6.2ES-B2
D402	8-719-911-19	s DIODE 1SS119
D403	8-719-911-19	s DIODE 1SS119
D404	8-719-911-19	s DIODE 1SS119
D405	8-719-911-19	s DIODE 1SS119
D501	8-719-109-93	s DIODE RD6.2ES-B2
D502	8-719-911-19	s DIODE 1SS119
D503	8-719-911-19	s DIODE 1SS119
D504	8-719-911-19	s DIODE 1SS119
D505	8-719-911-19	s DIODE 1SS119
D601	8-719-911-19	s DIODE 1SS119
D602	8-719-911-19	s DIODE 1SS119
D701	8-719-911-19	s DIODE 1SS119
D702	8-719-911-19	s DIODE 1SS119
IC101	8-759-700-62	s IC NJM4562D
IC102	8-759-700-62	s IC NJM4562D
IC103	8-759-208-10	s IC TC4053BPHB
IC201	8-759-700-62	s IC NJM4562D
IC301	8-759-990-82	s IC TL082CP
IC302	8-759-208-08	s IC TC4052BPHB
IC351	8-759-700-62	s IC NJM4562D
IC401	8-759-700-62	s IC NJM4562D
IC501	8-759-700-62	s IC NJM4562D
IC601	8-759-208-08	s IC TC4052BPHB
IC602	8-759-208-10	s IC TC4053BPHB
IC603	8-759-700-62	s IC NJM4562D
IC801	8-759-802-46	s IC LA4550
L101	1-407-519-00	s INDUCTOR
L201	1-407-519-00	s INDUCTOR
Q1	8-729-119-76	s TRANSISTOR 2SA1115P
Q2	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q3	8-729-119-76	s TRANSISTOR 2SA1115P
Q4	8-729-119-76	s TRANSISTOR 2SA1115P
Q5	8-729-119-76	s TRANSISTOR 2SA1115P
Q101	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q102	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q103	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q104	8-729-900-89	s TRANSISTOR DTC144ES
Q201	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q202	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q203	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q204	8-729-900-89	s TRANSISTOR DTC144ES
Q351	8-729-201-05	s TRANSISTOR 2SC2878-B

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(AU-127 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q352	8-729-201-05	s TRANSISTOR 2SC2878-B
Q401	8-729-201-05	s TRANSISTOR 2SC2878-B
Q402	8-729-201-05	s TRANSISTOR 2SC2878-B
Q403	8-729-201-05	s TRANSISTOR 2SC2878-B
Q501	8-729-201-05	s TRANSISTOR 2SC2878-B
Q502	8-729-201-05	s TRANSISTOR 2SC2878-B
Q503	8-729-201-05	s TRANSISTOR 2SC2878-B
Q601	8-729-201-05	s TRANSISTOR 2SC2878-B
Q602	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q701	8-729-201-05	s TRANSISTOR 2SC2878-B
Q702	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q801	8-729-201-05	s TRANSISTOR 2SC2878-B
Q802	8-729-201-05	s TRANSISTOR 2SC2878-B
Q803	8-729-201-05	s TRANSISTOR 2SC2878-B
Q901	8-729-201-05	s TRANSISTOR 2SC2878-B
Q902	8-729-201-05	s TRANSISTOR 2SC2878-B
Q903	8-729-201-05	s TRANSISTOR 2SC2878-B
Q904	8-729-119-78	s TRANSISTOR 2SC2785-HFE
R1	1-249-428-11	s CARBON 8.2K 5% 1/4W
R2	1-249-417-11	s CARBON 1K 5% 1/4W
R3	1-249-429-11	s CARBON 10K 5% 1/4W
R4	1-249-405-11	s CARBON 100 5% 1/4W
R5	1-249-433-11	s CARBON 22K 5% 1/4W
R6	1-249-433-11	s CARBON 22K 5% 1/4W
R7	1-249-433-11	s CARBON 22K 5% 1/4W
R8	1-249-433-11	s CARBON 22K 5% 1/4W
R9	1-249-433-11	s CARBON 22K 5% 1/4W
R10	1-249-433-11	s CARBON 22K 5% 1/4W
R11	1-249-441-11	s CARBON 100K 5% 1/4W
R12	1-249-441-11	s CARBON 100K 5% 1/4W
R13	1-249-441-11	s CARBON 100K 5% 1/4W
R14	1-249-401-11	s CARBON 47 5% 1/4W
R101	1-249-437-11	s CARBON 47K 5% 1/4W
R102	1-249-437-11	s CARBON 47K 5% 1/4W
R103	1-249-425-11	s CARBON 4.7K 5% 1/4W
R104	1-247-891-00	s CARBON 330K 5% 1/4W
R105	1-249-417-11	s CARBON 1K 5% 1/4W
R106	1-249-429-11	s CARBON 10K 5% 1/4W
R107	1-249-437-11	s CARBON 47K 5% 1/4W
R108	1-249-437-11	s CARBON 47K 5% 1/4W
R109	1-249-429-11	s CARBON 10K 5% 1/4W
R110	1-249-437-11	s CARBON 47K 5% 1/4W
R111	1-249-437-11	s CARBON 47K 5% 1/4W
R112	1-249-429-11	s CARBON 10K 5% 1/4W
R113	1-249-401-11	s CARBON 47 5% 1/4W
R114	1-247-887-00	s CARBON 220K 5% 1/4W
R115	1-249-405-11	s CARBON 100 5% 1/4W
R116	1-249-405-11	s CARBON 100 5% 1/4W
R117	1-249-433-11	s CARBON 22K 5% 1/4W
R118	1-249-433-11	s CARBON 22K 5% 1/4W
R119	1-249-417-11	s CARBON 1K 5% 1/4W
R120	1-249-441-11	s CARBON 100K 5% 1/4W
R121	1-249-437-11	s CARBON 47K 5% 1/4W
R122	1-249-421-11	s CARBON 2.2K 5% 1/4W
R123	1-249-437-11	s CARBON 47K 5% 1/4W
R124	1-249-417-11	s CARBON 1K 5% 1/4W
R127	1-249-405-11	s CARBON 100 5% 1/4W
R128	1-249-437-11	s CARBON 47K 5% 1/4W

(AU-127 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R129	1-249-437-11	s CARBON 47K 5% 1/4W
R201	1-249-437-11	s CARBON 47K 5% 1/4W
R202	1-249-437-11	s CARBON 47K 5% 1/4W
R203	1-249-425-11	s CARBON 4.7K 5% 1/4W
R204	1-247-891-00	s CARBON 330K 5% 1/4W
R205	1-249-417-11	s CARBON 1K 5% 1/4W
R206	1-249-429-11	s CARBON 10K 5% 1/4W
R207	1-249-437-11	s CARBON 47K 5% 1/4W
R208	1-249-437-11	s CARBON 47K 5% 1/4W
R209	1-249-429-11	s CARBON 10K 5% 1/4W
R210	1-249-437-11	s CARBON 47K 5% 1/4W
R211	1-249-437-11	s CARBON 47K 5% 1/4W
R212	1-249-429-11	s CARBON 10K 5% 1/4W
R213	1-249-401-11	s CARBON 47 5% 1/4W
R214	1-247-887-00	s CARBON 220K 5% 1/4W
R215	1-249-405-11	s CARBON 100 5% 1/4W
R216	1-249-405-11	s CARBON 100 5% 1/4W
R217	1-249-433-11	s CARBON 22K 5% 1/4W
R219	1-249-417-11	s CARBON 1K 5% 1/4W
R220	1-249-441-11	s CARBON 100K 5% 1/4W
R221	1-249-437-11	s CARBON 47K 5% 1/4W
R222	1-249-421-11	s CARBON 2.2K 5% 1/4W
R223	1-249-437-11	s CARBON 47K 5% 1/4W
R224	1-249-417-11	s CARBON 1K 5% 1/4W
R227	1-249-405-11	s CARBON 100 5% 1/4W
R228	1-249-437-11	s CARBON 47K 5% 1/4W
R301	1-249-437-11	s CARBON 47K 5% 1/4W
R302	1-249-437-11	s CARBON 47K 5% 1/4W
R303	1-249-405-11	s CARBON 100 5% 1/4W
R305	1-249-425-11	s CARBON 4.7K 5% 1/4W
R306	1-249-429-11	s CARBON 10K 5% 1/4W
R307	1-249-437-11	s CARBON 47K 5% 1/4W
R308	1-249-437-11	s CARBON 47K 5% 1/4W
R309	1-249-437-11	s CARBON 47K 5% 1/4W
R311	1-249-437-11	s CARBON 47K 5% 1/4W
R312	1-249-433-11	s CARBON 22K 5% 1/4W
R313	1-249-433-11	s CARBON 22K 5% 1/4W
R314	1-249-433-11	s CARBON 22K 5% 1/4W
R315	1-249-433-11	s CARBON 22K 5% 1/4W
R351	1-249-421-11	s CARBON 2.2K 5% 1/4W
R352	1-249-441-11	s CARBON 100K 5% 1/4W
R353	1-249-421-11	s CARBON 2.2K 5% 1/4W
R354	1-249-437-11	s CARBON 47K 5% 1/4W
R355	1-249-385-11	s CARBON 2.2 5% 1/4W
R356	1-249-434-11	s CARBON 27K 5% 1/4W
R358	1-249-429-11	s CARBON 10K 5% 1/4W
R359	1-249-425-11	s CARBON 4.7K 5% 1/4W
R360	1-249-437-11	s CARBON 47K 5% 1/4W
R361	1-249-437-11	s CARBON 47K 5% 1/4W
R362	1-249-437-11	s CARBON 47K 5% 1/4W
R364	1-249-433-11	s CARBON 22K 5% 1/4W
R365	1-249-433-11	s CARBON 22K 5% 1/4W
R366	1-249-437-11	s CARBON 47K 5% 1/4W
R367	1-249-437-11	s CARBON 47K 5% 1/4W
R370	1-249-437-11	s CARBON 47K 5% 1/4W
R371	1-249-437-11	s CARBON 47K 5% 1/4W
R372	1-249-437-11	s CARBON 47K 5% 1/4W
R373	1-249-433-11	s CARBON 22K 5% 1/4W
R374	1-249-437-11	s CARBON 47K 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(AU-127 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R375	1-249-433-11	s CARBON 22K 5% 1/4W
R376	1-249-433-11	s CARBON 22K 5% 1/4W
R377	1-249-433-11	s CARBON 22K 5% 1/4W
R378	1-249-417-11	s CARBON 1K 5% 1/4W
R379	1-249-441-11	s CARBON 100K 5% 1/4W
R380	1-249-429-11	s CARBON 10K 5% 1/4W
R401	1-249-417-11	s CARBON 1K 5% 1/4W
R402	1-249-421-11	s CARBON 2.2K 5% 1/4W
R404	1-249-421-11	s CARBON 2.2K 5% 1/4W
R405	1-249-437-11	s CARBON 47K 5% 1/4W
R406	1-249-422-11	s CARBON 2.7K 5% 1/4W
R407	1-249-425-11	s CARBON 4.7K 5% 1/4W
R409	1-249-433-11	s CARBON 22K 5% 1/4W
R410	1-249-433-11	s CARBON 22K 5% 1/4W
R411	1-249-433-11	s CARBON 22K 5% 1/4W
R412	1-249-422-11	s CARBON 2.7K 5% 1/4W
R413	1-249-429-11	s CARBON 10K 5% 1/4W
R414	1-249-441-11	s CARBON 100K 5% 1/4W
R415	1-249-417-11	s CARBON 1K 5% 1/4W
R416	1-249-441-11	s CARBON 100K 5% 1/4W
R417	1-249-429-11	s CARBON 10K 5% 1/4W
R418	1-249-431-11	s CARBON 15K 5% 1/4W
R501	1-249-417-11	s CARBON 1K 5% 1/4W
R502	1-249-421-11	s CARBON 2.2K 5% 1/4W
R504	1-249-421-11	s CARBON 2.2K 5% 1/4W
R505	1-249-437-11	s CARBON 47K 5% 1/4W
R506	1-249-422-11	s CARBON 2.7K 5% 1/4W
R507	1-249-425-11	s CARBON 4.7K 5% 1/4W
R509	1-249-433-11	s CARBON 22K 5% 1/4W
R510	1-249-433-11	s CARBON 22K 5% 1/4W
R511	1-249-433-11	s CARBON 22K 5% 1/4W
R512	1-249-422-11	s CARBON 2.7K 5% 1/4W
R513	1-249-429-11	s CARBON 10K 5% 1/4W
R514	1-249-441-11	s CARBON 100K 5% 1/4W
R515	1-249-417-11	s CARBON 1K 5% 1/4W
R516	1-249-441-11	s CARBON 100K 5% 1/4W
R517	1-249-429-11	s CARBON 10K 5% 1/4W
R601	1-249-437-11	s CARBON 47K 5% 1/4W
R602	1-249-429-11	s CARBON 10K 5% 1/4W
R603	1-249-425-11	s CARBON 4.7K 5% 1/4W
R604	1-249-437-11	s CARBON 47K 5% 1/4W
R605	1-249-421-11	s CARBON 2.2K 5% 1/4W
R606	1-249-419-11	s CARBON 1.5K 5% 1/4W
R607	1-249-429-11	s CARBON 10K 5% 1/4W
R608	1-249-433-11	s CARBON 22K 5% 1/4W
R609	1-249-425-11	s CARBON 4.7K 5% 1/4W
R610	1-249-411-11	s CARBON 330 5% 1/4W
R611	1-249-389-11	s CARBON 4.7 5% 1/4W
R701	1-249-437-11	s CARBON 47K 5% 1/4W
R702	1-249-429-11	s CARBON 10K 5% 1/4W
R703	1-249-425-11	s CARBON 4.7K 5% 1/4W
R704	1-249-437-11	s CARBON 47K 5% 1/4W
R705	1-249-421-11	s CARBON 2.2K 5% 1/4W
R706	1-249-419-11	s CARBON 1.5K 5% 1/4W
R707	1-249-429-11	s CARBON 10K 5% 1/4W
R708	1-249-433-11	s CARBON 22K 5% 1/4W
R709	1-249-425-11	s CARBON 4.7K 5% 1/4W
R710	1-249-411-11	s CARBON 330 5% 1/4W
R711	1-249-389-11	s CARBON 4.7 5% 1/4W

(AU-127 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R801	1-249-421-11	s CARBON 2.2K 5% 1/4W
R802	1-249-439-11	s CARBON 68K 5% 1/4W
R803	1-249-419-11	s CARBON 1.5K 5% 1/4W
R804	1-249-407-11	s CARBON 150 5% 1/4W
R805	1-249-437-11	s CARBON 47K 5% 1/4W
R806	1-249-389-11	s CARBON 4.7 5% 1/4W
R807	1-249-415-11	s CARBON 680 5% 1/4W
R808	1-249-389-11	s CARBON 4.7 5% 1/4W
R809	1-249-421-11	s CARBON 2.2K 5% 1/4W
R811	1-249-421-11	s CARBON 2.2K 5% 1/4W
R812	1-249-421-11	s CARBON 2.2K 5% 1/4W
R901	1-249-421-11	s CARBON 2.2K 5% 1/4W
R902	1-249-439-11	s CARBON 68K 5% 1/4W
R903	1-249-419-11	s CARBON 1.5K 5% 1/4W
R904	1-249-407-11	s CARBON 150 5% 1/4W
R905	1-249-437-11	s CARBON 47K 5% 1/4W
R906	1-249-389-11	s CARBON 4.7 5% 1/4W
R907	1-249-415-11	s CARBON 680 5% 1/4W
R908	1-249-389-11	s CARBON 4.7 5% 1/4W
R909	1-249-421-11	s CARBON 2.2K 5% 1/4W
R911	1-249-421-11	s CARBON 2.2K 5% 1/4W
R912	1-249-421-11	s CARBON 2.2K 5% 1/4W
R913	1-249-437-11	s CARBON 47K 5% 1/4W
R914	1-249-425-11	s CARBON 4.7K 5% 1/4W
R915	1-249-417-11	s CARBON 1K 5% 1/4W
R916	1-249-441-11	s CARBON 100K 5% 1/4W
RV101	1-228-996-00	s RES, ADJ, METAL 47K
RV201	1-228-996-00	s RES, ADJ, METAL 47K
RV301	1-228-995-00	s RES, ADJ, METAL 22K
RV302	1-228-995-00	s RES, ADJ, METAL 22K
RV351	1-228-996-00	s RES, ADJ, METAL 47K
RV401	1-228-993-00	s RES, ADJ, METAL 4.7K
RV501	1-228-993-00	s RES, ADJ, METAL 4.7K
RV601	1-228-990-00	s RES, ADJ, METAL 1K
RV701	1-228-990-00	s RES, ADJ, METAL 1K

CP-141 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-631-807-11	o PRINTED CIRCUIT BOARD, CP-141
R001	1-215-392-00	s METAL 62 1% 1/6W
R002	1-247-804-11	s CARBON 75 5% 1/4W
R003	1-215-376-00	s METAL 13 1% 1/6W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

CP-162 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-635-085-11	o PRINTED CIRCUIT BOARD, CP-162
CN1007	1-566-850-31	s CONNECTOR, (S) TERMINAL 4P
CN1008	1-566-850-31	s CONNECTOR, (S) TERMINAL 4P

DC-45A BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7062-150-A	o MOUNTED CIRCUIT BOARD, DC-45A
2pcs	1-533-189-11	o HOLDER, FUSE
2pcs	2-371-561-00	s BUSHING (P), INSULATING
2pcs	3-703-037-00	s INSULATOR, TO-220
4pcs	3-718-718-02	o HEAT SINK (A)
4pcs	7-621-759-65	s +PSW, 2.6X8
2pcs	7-682-903-01	s SCREW +PWH 3X5
C2	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C4	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C6	1-161-494-00	s CERAMIC 0.022uF 25V
C8	1-161-494-00	s CERAMIC 0.022uF 25V
C11	1-161-494-00	s CERAMIC 0.022uF 25V
C13	1-161-494-00	s CERAMIC 0.022uF 25V
C14	1-161-494-00	s CERAMIC 0.022uF 25V
C16	1-161-494-00	s CERAMIC 0.022uF 25V
C18	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C21	1-125-579-11	s DOUBLE LAYERS 0.1 FARAD 5.5V
C100	1-161-379-00	s CERAMIC 0.01uF 20% 25V
CP1	1-464-978-11	s CONVERTER DC-DC (CD-86)
D1	8-719-110-17	s DIODE RD10ES-B2
D2	8-719-911-55	s DIODE U05G
D3	8-719-911-55	s DIODE U05G
D4	8-719-911-55	s DIODE U05G
D5	8-719-911-55	s DIODE U05G
F2	A1-532-286-00	s FUSE, TIMELAG 2.5A 250V
IC1	8-759-982-10	s IC RC7809FA
IC2	8-759-982-05	s IC RC7805FA
IC3	8-759-135-80	s IC UPC358C
L1	1-410-087-31	s INDUCTOR 10mH
L2	1-410-064-11	s INDUCTOR 2.7mH
PS1	A1-532-844-21	s LINK, IC 3.15A
PS3	A1-532-844-21	s LINK, IC 3.15A
PS4	A1-532-838-21	s LINK, IC 0.8A
PS5	A1-532-841-21	s LINK, IC 1.6A
Q1	8-729-119-76	s TRANSISTOR 2SA1115P
Q2	8-729-385-82	s TRANSISTOR 2SB858-C
Q3	8-729-900-89	s TRANSISTOR DTC144ES
Q4	8-729-900-65	s TRANSISTOR DTA144ES
Q5	8-729-900-89	s TRANSISTOR DTC144ES
Q6	8-729-382-64	s TRANSISTOR 2SC1826-G
Q7	8-729-900-89	s TRANSISTOR DTC144ES
R1	1-249-417-11	s CARBON 1K 5% 1/4W
R2	1-249-417-11	s CARBON 1K 5% 1/4W
R3	1-249-425-11	s CARBON 4.7K 5% 1/4W
R4	1-249-408-11	s CARBON 180 5% 1/4W
R5	1-249-427-11	s CARBON 6.8K 5% 1/4W
R6	1-249-420-11	s CARBON 1.8K 5% 1/4W
R7	1-215-444-00	s METAL 9.1K 1% 1/6W
R8	1-215-443-00	s METAL 8.2K 1% 1/6W
R9	1-249-417-11	s CARBON 1K 5% 1/4W
R10	1-249-425-11	s CARBON 4.7K 5% 1/4W
R11	1-249-417-11	s CARBON 1K 5% 1/4W
R12	1-249-433-11	s CARBON 22K 5% 1/4W
R13	1-249-437-11	s CARBON 47K 5% 1/4W
R15	1-249-405-11	s CARBON 100 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(DC-45A BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R16	1-249-425-11	s CARBON 4.7K 5% 1/4W
R17	1-249-425-11	s CARBON 4.7K 5% 1/4W
R18	1-249-441-11	s CARBON 100K 5% 1/4W
RV1	1-230-496-11	s RES, ADJ, METAL 10K

DD-12 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7061-772-A	o MOUNTED CIRCUIT BOARD, DD-12 This board includes the DP-101 Board.

1pc	1-535-699-11	s CABLE, JUMPER 23P
D1	8-719-911-19	s DIODE 1SS119
D321	8-719-911-19	s DIODE 1SS119
IC2	8-759-645-16	s IC M54516P
IC3	8-759-645-16	s IC M54516P
Q308	8-729-903-02	s TRANSISTOR DTA143XS
Q309	8-729-903-02	s TRANSISTOR DTA143XS
Q310	8-729-903-02	s TRANSISTOR DTA143XS
Q311	8-729-903-02	s TRANSISTOR DTA143XS
Q312	8-729-903-02	s TRANSISTOR DTA143XS
Q313	8-729-903-02	s TRANSISTOR DTA143XS
Q314	8-729-903-02	s TRANSISTOR DTA143XS
R366	1-249-402-11	s CARBON 56 5% 1/4W
R367	1-249-402-11	s CARBON 56 5% 1/4W
R368	1-249-402-11	s CARBON 56 5% 1/4W
R369	1-249-402-11	s CARBON 56 5% 1/4W
R370	1-249-402-11	s CARBON 56 5% 1/4W
R371	1-249-402-11	s CARBON 56 5% 1/4W
R372	1-249-402-11	s CARBON 56 5% 1/4W
S1009	1-516-995-00	s SWITCH, LEVER SLIDE
S1010	1-552-539-00	s SWITCH, TACTILE

DI-12 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7062-154-A	o MOUNTED CIRCUIT BOARD, DI-12
C31	1-163-103-00	s CERAMIC, CHIP 27PF 5% 50V
C36	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C220	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C221	1-164-005-11	s CERAMIC, CHIP 0.47uF 25V
C237	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C246	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C248	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C249	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C250	1-164-182-11	s CERAMIC CHIP 3300PF 10% 100V
C252	1-126-157-11	s ELECT 10uF 20% 16V
C258	1-163-098-00	s CERAMIC, CHIP 16PF 5% 50V
C260	1-124-638-11	s ELECT 22uF 20% 10V
C263	1-162-638-11	s CERAMIC, CHIP 1uF 16V
C266	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C267	1-162-638-11	s CERAMIC, CHIP 1uF 16V
C273	1-124-638-11	s ELECT 22uF 20% 10V
C277	1-124-638-11	s ELECT 22uF 20% 10V
C285	1-124-638-11	s ELECT 22uF 20% 10V
C289	1-126-176-11	s ELECT 220uF 20% 10V
C290	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C298	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C309	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C319	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 100V
C322	1-124-638-11	s ELECT 22uF 20% 10V
C323	1-124-638-11	s ELECT 22uF 20% 10V
C401	1-126-157-11	s ELECT 10uF 20% 16V
C407	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C408	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C409	1-131-361-00	s TANTALUM 2.2uF 10% 20V
C410	1-126-157-11	s ELECT 10uF 20% 16V
C413	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C419	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 100V
C422	1-131-374-00	s TANTALUM 33uF 10% 16V
C426	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C429	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C430	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C431	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C432	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C433	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C502	1-124-638-11	s ELECT 22uF 20% 10V
C507	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C510	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C780	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C782	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 100V
C783	1-163-022-00	s CERAMIC, CHIP 0.012uF 10% 50V
C790	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C791	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C794	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C798	1-124-256-00	s ELECT 1.5uF 20% 50V
C799	1-126-157-11	s ELECT 10uF 20% 16V
C870	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C871	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 100V
C900	1-131-345-00	s TANTALUM 0.47uF 10% 35V
CN655	1-506-471-11	s CONNECTOR, 6P, MALE
CN662	1-506-471-11	s CONNECTOR, 6P, MALE
CV31	1-141-276-00	s CAP, TRIMMER B

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(DI-12 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
CV301	1-141-276-00	s CAP, TRIMMER B
CV302	1-141-276-00	s CAP, TRIMMER B
D31	8-713-300-88	s DIODE 1T33C-01
D301	8-713-300-88	s DIODE 1T33C-01
D302	8-713-300-88	s DIODE 1T33C-01
D308	8-719-940-45	s DIODE DWA010
D401	8-719-940-45	s DIODE DWA010
D403	8-719-940-45	s DIODE DWA010
D404	8-719-104-10	s DIODE 1SS99
FL201	1-421-927-21	s FILTER, NOISE
IC301	8-759-987-17	s IC CXD1226Q
IC302	8-759-987-18	s IC CXD1227Q
IC303	8-759-987-19	s IC CXD1228Q
IC304	8-759-987-20	s IC CXD1229Q
IC305	8-752-337-41	s IC CXK1206M
IC306	8-752-337-41	s IC CXK1206M
IC307	8-752-337-41	s IC CXK1206M
IC308	8-752-329-21	s IC CXD1175M
IC309	8-752-329-21	s IC CXD1175M
IC310	8-752-032-96	s IC CXA1106M
IC311	8-752-032-96	s IC CXA1106M
IC312	8-759-926-23	s IC SN74HC163NS
IC313	8-759-925-85	s IC SN74HC32NS
IC316	8-759-206-28	s IC TC74HC123F
IC401	8-759-009-07	s IC MC14053BF
IC402	8-759-100-93	s IC UPC393G2
IC403	8-759-009-51	s IC MC14538BF
IC404	8-759-981-65	s IC LM2903M
IC405	8-759-925-80	s IC SN74HC14NS
IC406	8-759-925-90	s IC SN74HC74NS
IC410	8-759-981-65	s IC LM2903M
IC500	8-749-920-71	s IC SI3522V
IC501	8-759-011-65	s IC MC74HC4053F
IC780	8-759-009-51	s IC MC14538BF
IC781	8-759-925-90	s IC SN74HC74NS
IC782	8-759-926-20	s IC SN74HC160NS
IC783	8-759-925-99	s IC SN74HC109NS
IC790	8-759-987-20	s IC CXD1229Q
IC791	8-759-908-17	s IC TL082CPS
IC792	8-759-925-90	s IC SN74HC74NS
IC850	8-759-925-76	s IC SN74HC08NS
IC851	8-759-038-15	s IC MC74HC4538AF
IC852	8-759-009-51	s IC MC14538BF
IC853	8-759-925-90	s IC SN74HC74NS
IC854	8-759-929-73	s IC SN74LS00NS
IC855	8-759-926-29	s IC SN74HC175NS
L201	1-410-482-31	s INDUCTOR 100uH
L202	1-410-482-31	s INDUCTOR 100uH
L205	1-410-482-31	s INDUCTOR 100uH
L206	1-410-482-31	s INDUCTOR 100uH
L211	1-410-466-41	s INDUCTOR 4.7uH
L212	1-410-478-11	s INDUCTOR 47uH
L214	1-410-478-11	s INDUCTOR 47uH
L215	1-410-478-11	s INDUCTOR 47uH
L216	1-410-478-11	s INDUCTOR 47uH
L223	1-410-478-11	s INDUCTOR 47uH

(DI-12 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
L224	1-410-478-11	s INDUCTOR 47uH
L501	1-410-478-11	s INDUCTOR 47uH
L502	1-410-482-31	s INDUCTOR 100uH
L810	1-410-482-31	s INDUCTOR 100uH
L811	1-410-482-31	s INDUCTOR 100uH
L812	1-410-482-31	s INDUCTOR 100uH
Q31	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q32	8-729-140-47	s TRANSISTOR 2SC3735-B34
Q205	8-729-100-66	s TRANSISTOR 2SC1623
Q210	8-729-100-66	s TRANSISTOR 2SC1623
Q212	8-729-100-66	s TRANSISTOR 2SC1623
Q214	8-729-100-66	s TRANSISTOR 2SC1623
Q224	8-729-100-66	s TRANSISTOR 2SC1623
Q401	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q402	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q403	8-729-901-06	s TRANSISTOR DTA144EK
Q404	8-729-216-22	s TRANSISTOR 2SA1162
Q405	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q406	8-729-216-22	s TRANSISTOR 2SA1162
Q501	8-729-100-66	s TRANSISTOR 2SC1623
Q502	8-729-100-66	s TRANSISTOR 2SC1623
Q629	8-729-901-01	s TRANSISTOR DTC144EK
Q780	8-729-901-01	s TRANSISTOR DTC144EK
Q900	8-729-900-89	s TRANSISTOR DTC144ES
Q901	8-729-119-76	s TRANSISTOR 2SA1115P
R31	1-216-692-11	s METAL, CHIP 51K 0.5% 1/10W
R32	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R34	1-216-638-11	s METAL, CHIP 300 0.5% 1/10W
R35	1-216-653-11	s METAL, CHIP 1.2K 0.5% 1/10W
R36	1-216-648-11	s METAL, CHIP 750 0.5% 1/10W
R37	1-216-671-11	s METAL, CHIP 6.8K 0.5% 1/10W
R38	1-216-686-11	s METAL, CHIP 30K 0.5% 1/10W
R248	1-216-675-11	s METAL, CHIP 10K 0.5% 1/10W
R249	1-216-675-11	s METAL, CHIP 10K 0.5% 1/10W
R266	1-216-648-11	s METAL, CHIP 750 0.5% 1/10W
R407	1-216-675-11	s METAL, CHIP 10K 0.5% 1/10W
R409	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R429	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
R440	1-216-066-00	s METAL, CHIP 5.1K 5% 1/10W
R470	1-216-084-00	s METAL, CHIP 30K 5% 1/10W
R490	1-216-675-11	s METAL, CHIP 10K 0.5% 1/10W
R491	1-216-674-11	s METAL, CHIP 9.1K 0.5% 1/10W
R496	1-247-897-11	s CARBON 560K 5% 1/4W
R501	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R502	1-216-676-11	s METAL, CHIP 11K 0.5% 1/10W
R782	1-216-682-11	s METAL, CHIP 20K 0.5% 1/10W
R799	1-216-643-11	s METAL, CHIP 470 0.5% 1/10W
R859	1-216-689-11	s METAL, CHIP 39K 0.5% 1/10W
R900	1-249-429-11	s CARBON 10K 5% 1/4W
R901	1-215-453-00	s METAL 22K 1% 1/6W
R903	1-249-423-11	s CARBON 3.3K 5% 1/4W
RV401	1-228-994-00	s RES, ADJ, METAL 10K
RV402	1-228-994-00	s RES, ADJ, METAL 10K
RV403	1-228-996-00	s RES, ADJ, METAL 47K
X31	1-577-704-11	s CRYSTAL 14.21875MHz
X301	1-567-344-21	s VCO, CRYSTAL 17.734475MHz

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

DI-13 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7062-155-A	o MOUNTED CIRCUIT BOARD, DI-13
C11	1-163-103-00	s CERAMIC, CHIP 27PF 5% 50V
C16	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C21	1-163-103-00	s CERAMIC, CHIP 27PF 5% 50V
C26	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C230	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C235	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C236	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C243	1-163-127-00	s CERAMIC, CHIP 270PF 5% 50V
C244	1-163-139-00	s CERAMIC, CHIP 820PF 5% 50V
C550	1-163-099-00	s CERAMIC, CHIP 18PF 5% 50V
C653	1-163-110-00	s CERAMIC, CHIP 51PF 5% 50V
C654	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C655	1-126-103-11	s ELECT 470uF 20% 16V
C656	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C658	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C660	1-163-110-00	s CERAMIC, CHIP 51PF 5% 50V
C663	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C664	1-126-103-11	s ELECT 470uF 20% 16V
C701	1-126-176-11	s ELECT 220uF 20% 10V
C702	1-126-176-11	s ELECT 220uF 20% 10V
C703	1-126-176-11	s ELECT 220uF 20% 10V
C704	1-126-176-11	s ELECT 220uF 20% 10V
C711	1-163-112-00	s CERAMIC, CHIP 62PF 5% 50V
C713	1-163-112-00	s CERAMIC, CHIP 62PF 5% 50V
C715	1-131-341-00	s TANTALUM 0.1uF 10% 35V
C730	1-126-094-11	s ELECT 4.7uF 20% 35V
C751	1-131-347-00	s TANTALUM 1uF 10% 35V
C752	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C753	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C754	1-126-233-11	s ELECT 22uF 20% 50V
C755	1-126-233-11	s ELECT 22uF 20% 50V
C761	1-163-011-11	s CERAMIC 0.0015uF 10% 50V
C762	1-126-157-11	s ELECT 10uF 20% 16V
CN652	1-506-471-11	s CONNECTOR, 6P, MALE
CN672	1-506-471-11	s CONNECTOR, 6P, MALE
CV11	1-141-227-00	s CAP, TRIMMER 20PF
CV21	1-141-227-00	s CAP, TRIMMER 20PF
D11	8-713-300-88	s DIODE 1T33C-01
D21	8-713-300-88	s DIODE 1T33C-01
D701	8-719-800-76	s DIODE 1SS226
D702	8-719-800-76	s DIODE 1SS226
FL651	1-235-759-11	s FILTER, LOW-PASS
FL652	1-235-181-00	s FILTER, BANDPASS 4.43MHZ
IC710	8-741-104-00	s IC BX1040
IC711	8-759-101-12	s IC UPC311G2
IC720	8-752-335-47	s IC CXD1216M
IC740	8-752-332-67	s IC CXD1217M
IC750	8-759-206-28	s IC TC74HC123F
IC751	8-759-009-07	s IC MC14053BF
IC752	8-759-906-53	s IC TL062CPS
IC770	8-759-926-56	s IC SN74HC273NS
IC771	8-759-926-56	s IC SN74HC273NS
IC772	8-759-926-56	s IC SN74HC273NS
IC774	8-759-926-56	s IC SN74HC273NS
IC775	8-759-926-56	s IC SN74HC273NS

(DI-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC800	8-759-982-25	s IC RC78L09A
L204	1-410-482-31	s INDUCTOR 100uH
L551	1-410-482-31	s INDUCTOR 100uH
L653	1-410-482-31	s INDUCTOR 100uH
L654	1-410-482-31	s INDUCTOR 100uH
L801	1-410-482-31	s INDUCTOR 100uH
L802	1-410-482-31	s INDUCTOR 100uH
L803	1-410-482-31	s INDUCTOR 100uH
L804	1-410-482-31	s INDUCTOR 100uH
L805	1-410-482-31	s INDUCTOR 100uH
L806	1-410-482-31	s INDUCTOR 100uH
L807	1-410-482-31	s INDUCTOR 100uH
L808	1-410-482-31	s INDUCTOR 100uH
L809	1-410-482-31	s INDUCTOR 100uH
Q11	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q12	8-729-140-47	s TRANSISTOR 2SC3735-B34
Q21	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q22	8-729-140-47	s TRANSISTOR 2SC3735-B34
Q203	8-729-100-66	s TRANSISTOR 2SC1623
Q204	8-729-100-66	s TRANSISTOR 2SC1623
Q206	8-729-100-66	s TRANSISTOR 2SC1623
Q207	8-729-100-66	s TRANSISTOR 2SC1623
Q208	8-729-100-66	s TRANSISTOR 2SC1623
Q209	8-729-216-22	s TRANSISTOR 2SA1162
Q222	8-729-100-66	s TRANSISTOR 2SC1623
Q228	8-729-100-66	s TRANSISTOR 2SC1623
Q229	8-729-100-66	s TRANSISTOR 2SC1623
Q651	8-729-100-66	s TRANSISTOR 2SC1623
Q652	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q653	8-729-100-66	s TRANSISTOR 2SC1623
Q654	8-729-100-66	s TRANSISTOR 2SC1623
Q655	8-729-100-66	s TRANSISTOR 2SC1623
Q656	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q657	8-729-100-66	s TRANSISTOR 2SC1623
Q658	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q659	8-729-100-66	s TRANSISTOR 2SC1623
Q701	8-729-100-66	s TRANSISTOR 2SC1623
Q702	8-729-100-66	s TRANSISTOR 2SC1623
Q710	8-729-100-66	s TRANSISTOR 2SC1623
Q711	8-729-109-41	s TRANSISTOR 2SK94-X1
Q720	8-729-109-41	s TRANSISTOR 2SK94-X1
R11	1-216-692-11	s METAL, CHIP 51K 0.5% 1/10W
R12	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R14	1-216-638-11	s METAL, CHIP 300 0.5% 1/10W
R15	1-216-653-11	s METAL, CHIP 1.2K 0.5% 1/10W
R16	1-216-648-11	s METAL, CHIP 750 0.5% 1/10W
R17	1-216-671-11	s METAL, CHIP 6.8K 0.5% 1/10W
R18	1-216-686-11	s METAL, CHIP 30K 0.5% 1/10W
R21	1-216-692-11	s METAL, CHIP 51K 0.5% 1/10W
R22	1-216-658-11	s METAL, CHIP 2K 0.5% 1/10W
R24	1-216-638-11	s METAL, CHIP 300 0.5% 1/10W
R25	1-216-653-11	s METAL, CHIP 1.2K 0.5% 1/10W
R26	1-216-648-11	s METAL, CHIP 750 0.5% 1/10W
R27	1-216-671-11	s METAL, CHIP 6.8K 0.5% 1/10W
R28	1-216-686-11	s METAL, CHIP 30K 0.5% 1/10W
R550	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R552	1-216-650-11	s METAL, CHIP 910 0.5% 1/10W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(DI-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R656	1-216-651-11 s	METAL, CHIP 1K 0.5% 1/10W
R657	1-216-676-11 s	METAL, CHIP 11K 0.5% 1/10W
R669	1-216-651-11 s	METAL, CHIP 1K 0.5% 1/10W
R670	1-216-651-11 s	METAL, CHIP 1K 0.5% 1/10W
R681	1-215-422-00 s	METAL 1.1K 1% 1/6W
R762	1-216-676-11 s	METAL, CHIP 11K 0.5% 1/10W
R763	1-216-678-11 s	METAL, CHIP 13K 0.5% 1/10W
R768	1-216-658-11 s	METAL, CHIP 2K 0.5% 1/10W
RV201	1-228-989-00 s	RES, ADJ, METAL 470
RV202	1-228-990-00 s	RES, ADJ, METAL 1K
RV651	1-228-989-00 s	RES, ADJ, METAL 470
RV652	1-228-989-00 s	RES, ADJ, METAL 470
RV750	1-228-993-00 s	RES, ADJ, METAL 4.7K
X11	1-579-056-11 s	CRYSTAL 14.1875MHz
X21	1-579-057-11 s	CRYSTAL 17.734475MHz

DP-101 BOARD

Ref. No. or Q'ty	Part No.	SP Description
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All of the component parts on DP-101 Board are supplied together with when you order DD-12 Board.

D1	8-719-942-19 s	LED LB402VK
D2	8-719-942-19 s	LED LB402VK
D3	8-719-942-19 s	LED LB402VK
D4	8-719-942-19 s	LED LB402VK

FP-84 BOARD

Ref. No. or Q'ty	Part No.	SP Description
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1PC A-7070-624-A s MOUNTED CIRCUIT BOARD, FP-84
All of component parts on the FP-84 Board are supplied together with when you order MD-23 Board.

W801	1-562-880-11 s	CONNECTOR, 15P, FEMALE
1pc	1-625-649-11 s	PRINTED CIRCUIT BOARD, FP-84 FLEXIBLE

FP-122 BOARD

Ref. No. or Q'ty	Part No.	SP Description
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1pc A-7070-625-A o MOUNTED CIRCUIT BOARD, FP-122
All of the component parts on the FP-122 Board are supplied together with when you order MD-23 Board.

1pc	1-625-650-11 s	PRINTED CIRCUIT BOARD, FP-122 FLEXIBLE
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W901	1-562-880-11 s	CONNECTOR, 15P, FEMALE
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FP-206 BOARD

Ref. No. or Q'ty	Part No.	SP Description
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1pc*	1-630-923-11 o	PRINTED CIRCUIT BOARD, FP-206 FLEXIBLE
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NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

FR-43 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7062-165-A o MOUNTED CIRCUIT BOARD, FR-43
This board includes RP-73 and RP-103 Boards.

1pc 1-559-763-11 s CABLE, FLAT 26P
1pc 3-739-102-01 o LID (H), UPPER, FR SHIELD CASE

C005 1-135-091-00 s TANTALUM, CHIP 1uF 10% 16V
C007 1-135-091-00 s TANTALUM, CHIP 1uF 10% 16V
C012 1-135-157-21 s TANTALUM, CHIP 10uF 20% 6.3V
C031 1-135-157-21 s TANTALUM, CHIP 10uF 20% 6.3V
C032 1-164-232-11 s CERAMIC 0.01uF 10% 100V

C033 1-164-232-11 s CERAMIC 0.01uF 10% 100V
C041 1-164-232-11 s CERAMIC 0.01uF 10% 100V
C043 1-135-157-21 s TANTALUM, CHIP 10uF 20% 6.3V
C052 1-135-211-11 s TANTALUM, CHIP 6.8uF 20% 6.3V
C053 1-135-148-21 s TANTALUM, CHIP 1.5uF 10% 16V

C054 1-163-037-11 s CERAMIC, CHIP 0.022uF 10% 25V
C055 1-163-037-11 s CERAMIC, CHIP 0.022uF 10% 25V
C056 1-163-037-11 s CERAMIC, CHIP 0.022uF 10% 25V

CN001 1-562-629-11 s CONNECTOR, 19P, FEMALE
CN002 1-565-209-11 s CONNECTOR, FPC 26P

D001 8-719-400-18 s DIODE 1S2837-T1

IC051 8-759-710-09 s IC NJM2233AM
IC052 8-759-009-07 s IC MC14053BF

L001 1-408-777-00 s INDUCTOR, CHIP 10uH
L031 1-408-777-00 s INDUCTOR, CHIP 10uH
L041 1-408-793-21 s INDUCTOR, CHIP 220uH
L042 1-408-777-00 s INDUCTOR, CHIP 10uH
L051 1-408-785-21 s INDUCTOR, CHIP 47uH

Q001 8-729-202-38 s TRANSISTOR 2SC3326N
Q002 8-729-202-38 s TRANSISTOR 2SC3326N
Q003 8-729-202-38 s TRANSISTOR 2SC3326N
Q004 8-729-202-38 s TRANSISTOR 2SC3326N
Q005 8-729-901-05 s TRANSISTOR DTA124EK

Q006 8-729-901-05 s TRANSISTOR DTA124EK
Q007 8-729-901-01 s TRANSISTOR DTC144EK
Q008 8-729-901-01 s TRANSISTOR DTC144EK
Q009 8-729-320-17 s TRANSISTOR 2SA1122-CD
Q031 8-729-201-27 s TRANSISTOR 2SC2715-Y

Q032 8-729-102-07 s TRANSISTOR 2SC2223-F13
Q041 8-729-216-22 s TRANSISTOR 2SA1162
Q042 8-729-119-76 s TRANSISTOR 2SA1115P
Q043 8-729-320-17 s TRANSISTOR 2SA1122-CD

R018 1-216-695-11 s METAL, CHIP 68K 0.5% 1/10W

RV1 1-230-871-11 s RES, ADJ, METAL 22K
RV2 1-230-871-11 s RES, ADJ, METAL 22K

HK-5 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7062-164-A o MOUNTED CIRCUIT BOARD, HK-5
1pc 3-531-576-01 s RIVET
1pc 3-724-107-01 o RETAINER, PC BOARD

C101 1-135-166-21 s TANTALUM, CHIP 47uF 10% 10V
C104 1-163-011-11 s CERAMIC 0.0015uF 10% 50V
C106 1-163-127-00 s CERAMIC, CHIP 270PF 5% 50V
C111 1-163-115-00 s CERAMIC, CHIP 82PF 5% 50V
C112 1-163-111-00 s CERAMIC, CHIP 56PF 5% 50V

C116 1-135-070-00 s TANTALUM, CHIP 0.1uF 10% 35V
C118 1-163-090-00 s CERAMIC, CHIP 7PF 50V
C122 1-107-042-00 s MICA 2.2PF 500V
C124 1-163-103-00 s CERAMIC, CHIP 27PF 5% 50V
C135 1-163-090-00 s CERAMIC, CHIP 7PF 50V

C136 1-163-099-00 s CERAMIC, CHIP 18PF 5% 50V
C143 1-135-145-11 s TANTALUM, CHIP 0.47uF 10% 35V
C149 1-107-206-00 s MICA 15PF 5% 500V
C181 1-102-074-00 s CERAMIC 0.001uF 10% 50V
C184 1-107-077-00 s MICA 47PF 5% 50V

C201 1-135-166-21 s TANTALUM, CHIP 47uF 10% 10V
C210 1-163-106-00 s CERAMIC, CHIP 36PF 5% 50V
C212 1-135-211-11 s TANTALUM, CHIP 6.8uF 20% 6.3V
C302 1-135-166-21 s TANTALUM, CHIP 47uF 10% 10V
C303 1-163-095-00 s CERAMIC, CHIP 12PF 5% 50V

C304 1-163-099-00 s CERAMIC, CHIP 18PF 5% 50V
C308 1-135-166-21 s TANTALUM, CHIP 47uF 10% 10V
C313 1-135-166-21 s TANTALUM, CHIP 47uF 10% 10V
C314 1-163-241-11 s CERAMIC, CHIP 39PF 5% 50V
C316 1-163-241-11 s CERAMIC, CHIP 39PF 5% 50V

C317 1-163-111-00 s CERAMIC, CHIP 56PF 5% 50V
C318 1-162-721-11 s CERAMIC 300PF 1% 50V
C323 1-163-012-00 s CERAMIC CHIP 1800PF 10% 50V
C325 1-135-156-21 s TANTALUM, CHIP 6.8uF 10% 10V
C327 1-135-156-21 s TANTALUM, CHIP 6.8uF 10% 10V

C329 1-135-166-21 s TANTALUM, CHIP 47uF 10% 10V
C331 1-135-156-21 s TANTALUM, CHIP 6.8uF 10% 10V
C332 1-135-155-21 s TANTAL CHIP 4.7uF 10% 16V
C334 1-135-155-21 s TANTAL CHIP 4.7uF 10% 16V
C340 1-135-072-21 s TANTALUM, CHIP 0.22uF 10% 35V

C341 1-135-161-21 s TANTALUM, CHIP 22uF 10% 10V
C342 1-135-166-21 s TANTALUM, CHIP 47uF 10% 10V
C345 1-163-134-00 s CERAMIC, CHIP 510PF 5% 50V
C348 1-135-166-21 s TANTALUM, CHIP 47uF 10% 10V
C349 1-135-177-21 s TANTALUM, CHIP 1uF 10% 25V

C350 1-131-367-00 s TANTALUM 22uF 10% 20V
C402 1-124-968-11 s ELECT, NONPOLAR 22uF 20% 6.3V
C403 1-163-106-00 s CERAMIC, CHIP 36PF 5% 50V
C404 1-163-111-00 s CERAMIC, CHIP 56PF 5% 50V
C405 1-163-099-00 s CERAMIC, CHIP 18PF 5% 50V

C407 1-135-149-21 s TANTALUM, CHIP 2.2uF 10% 10V
C409 1-164-232-11 s CERAMIC 0.01uF 10% 100V
C411 1-163-088-00 s CERAMIC, CHIP 5PF 50V
C412 1-135-156-21 s TANTALUM, CHIP 6.8uF 10% 10V
C414 1-164-232-11 s CERAMIC 0.01uF 10% 100V

C416 1-164-232-11 s CERAMIC 0.01uF 10% 100V
C417 1-162-722-11 s CERAMIC 330PF 1% 50V
C418 1-162-724-11 s CERAMIC 390PF 1% 50V
C419 1-162-721-11 s CERAMIC 300PF 1% 50V
C420 1-135-156-21 s TANTALUM, CHIP 6.8uF 10% 10V

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(HK-5 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C424	1-135-155-21	s TANTAL CHIP 4.7uF 10% 16V
C427	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C428	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C429	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C501	1-135-166-21	s TANTALUM, CHIP 47uF 10% 10V
C505	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C508	1-163-111-00	s CERAMIC, CHIP 56PF 5% 50V
C509	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C510	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C511	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C512	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C516	1-135-155-21	s TANTAL CHIP 4.7uF 10% 16V
C519	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C520	1-163-111-00	s CERAMIC, CHIP 56PF 5% 50V
C521	1-163-103-00	s CERAMIC, CHIP 27PF 5% 50V
C523	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C526	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C527	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C531	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C532	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C601	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C607	1-135-070-00	s TANTALUM, CHIP 0.1uF 10% 35V
C609	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C613	1-135-073-00	s TANTALUM, CHIP 0.33uF 10% 35V
C614	1-163-098-00	s CERAMIC, CHIP 16PF 5% 50V
C616	1-163-108-00	s CERAMIC, CHIP 43PF 5% 50V
C620	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C621	1-135-155-21	s TANTAL CHIP 4.7uF 10% 16V
C622	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C623	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C627	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C630	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C631	1-135-072-21	s TANTALUM, CHIP 0.22uF 10% 35V
C632	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C633	1-163-833-00	s CERAMIC, CHIP 0.068uF 25V
C634	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C635	1-164-182-11	s CERAMIC CHIP 3300PF 10% 100V
C637	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C644	1-163-115-00	s CERAMIC, CHIP 82PF 5% 50V
C645	1-163-111-00	s CERAMIC, CHIP 56PF 5% 50V
C646	1-163-119-00	s CERAMIC, CHIP 120PF 5% 50V
C652	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C659	1-163-111-00	s CERAMIC, CHIP 56PF 5% 50V
C660	1-163-011-11	s CERAMIC 0.0015uF 10% 50V
C666	1-163-011-11	s CERAMIC 0.0015uF 10% 50V
C667	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C668	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C671	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C675	1-163-088-00	s CERAMIC, CHIP 5PF 50V
C702	1-163-136-00	s CERAMIC, CHIP 620PF 5% 50V
C704	1-163-120-00	s CERAMIC, CHIP 130PF 5% 50V
C705	1-163-122-00	s CERAMIC 160PF 5% 50V
C706	1-163-122-00	s CERAMIC 160PF 5% 50V
C718	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C720	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C721	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C722	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C723	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C724	1-164-232-11	s CERAMIC 0.01uF 10% 100V

(HK-5 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C725	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C726	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C727	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C728	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C731	1-163-241-11	s CERAMIC, CHIP 39PF 5% 50V
C732	1-163-099-00	s CERAMIC, CHIP 18PF 5% 50V
C802	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C803	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C804	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C805	1-163-118-00	s CERAMIC, CHIP 110PF 5% 50V
C807	1-163-088-00	s CERAMIC, CHIP 5PF 50V
C809	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C812	1-135-079-21	s TANTALUM, CHIP 3.3uF 10% 35V
C815	1-135-153-21	s TANTALUM, CHIP 2.2uF 20% 25V
C819	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C825	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C905	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C907	1-135-166-21	s TANTALUM, CHIP 47uF 10% 10V
CN101	1-566-943-11	s CONNECTOR, BOARD TO BOARD 18P
CN102	1-566-943-11	s CONNECTOR, BOARD TO BOARD 18P
CV601	1-141-311-11	s CAR, TRIMMER 20PF
D101	8-719-400-18	s DIODE 1S2837-T1
D102	8-719-400-18	s DIODE 1S2837-T1
D105	8-719-800-76	s DIODE 1SS226
D106	8-719-400-18	s DIODE 1S2837-T1
D107	8-719-400-18	s DIODE 1S2837-T1
D108	8-719-400-18	s DIODE 1S2837-T1
D109	8-719-400-18	s DIODE 1S2837-T1
D301	8-719-400-18	s DIODE 1S2837-T1
D302	8-719-400-18	s DIODE 1S2837-T1
D401	8-719-400-18	s DIODE 1S2837-T1
D402	8-719-400-18	s DIODE 1S2837-T1
D403	8-719-400-18	s DIODE 1S2837-T1
D404	8-719-400-18	s DIODE 1S2837-T1
D405	8-719-400-18	s DIODE 1S2837-T1
D501	8-719-400-18	s DIODE 1S2837-T1
D601	8-719-800-76	s DIODE 1SS226
D602	8-719-400-18	s DIODE 1S2837-T1
D603	8-719-400-18	s DIODE 1S2837-T1
D604	8-719-400-18	s DIODE 1S2837-T1
D605	8-719-400-18	s DIODE 1S2837-T1
D801	8-719-400-18	s DIODE 1S2837-T1
D802	8-719-400-18	s DIODE 1S2837-T1
D804	8-719-400-18	s DIODE 1S2837-T1
D821	8-719-400-18	s DIODE 1S2837-T1
D822	8-719-800-76	s DIODE 1SS226
D823	8-719-800-76	s DIODE 1SS226
D901	8-719-400-18	s DIODE 1S2837-T1
DL501	1-415-517-21	s DELAY LINE 1H/2H
DL700	1-415-154-00	s DELAY LINE 35nS
FL301	1-236-370-11	s FILTER, LOW-PASS
FL401	1-415-761-11	s DELAY LINE
FL402	1-415-760-11	s DELAY LINE
FL801	1-235-632-11	s FILTER, BANDPASS 3.7MHZ
FL802	1-235-633-11	s FILTER, BANDPASS 5.17MHZ
IC101	8-759-233-94	s IC TA8607F

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
IC102	8-759-925-60	s IC BA401
IC301	8-752-003-00	s IC CX20030
IC401	8-752-031-01	s IC CXA1047M
IC501	8-752-003-12	s IC CX20031
IC601	8-759-924-94	s IC CX22021
IC602	8-752-003-22	s IC CX20032
IC603	8-752-305-47	s IC CX23054
IC604	8-759-009-51	s IC MC14538BF
IC702	8-759-012-00	s IC MC10H116M
IC703	8-752-006-12	s IC CX20061
IC801	8-759-202-67	s IC CX20117
IC901	8-759-925-74	s IC SN74HC04NS
IC902	8-759-925-74	s IC SN74HC04NS
L101	1-408-974-21	s INDUCTOR 22uH
L102	1-410-167-41	s INDUCTOR, CHIP 820uH
L103	1-408-792-00	s INDUCTOR, CHIP 180uH
L104	1-408-777-00	s INDUCTOR, CHIP 10uH
L105	1-408-770-11	s INDUCTOR, CHIP 2.7uH
L106	1-408-775-21	s INDUCTOR, CHIP 6.8uH
L107	1-408-775-21	s INDUCTOR, CHIP 6.8uH
L108	1-408-780-21	s INDUCTOR, CHIP 18uH
L109	1-408-797-11	s INDUCTOR, CHIP 470uH
L111	1-408-797-11	s INDUCTOR, CHIP 470uH
L112	1-408-797-11	s INDUCTOR, CHIP 470uH
L113	1-408-777-00	s INDUCTOR, CHIP 10uH
L114	1-408-779-31	s INDUCTOR, CHIP 15uH
L115	1-408-780-21	s INDUCTOR, CHIP 18uH
L201	1-408-982-11	s INDUCTOR 100uH
L204	1-408-782-11	s INDUCTOR, CHIP 27uH
L205	1-408-776-00	s INDUCTOR, CHIP 8.2uH
L301	1-408-790-00	s INDUCTOR, CHIP 120uH
L302	1-408-789-21	s INDUCTOR, CHIP 100uH
L303	1-408-777-00	s INDUCTOR, CHIP 10uH
L305	1-408-779-31	s INDUCTOR, CHIP 15uH
L306	1-408-782-11	s INDUCTOR, CHIP 27uH
L307	1-408-779-31	s INDUCTOR, CHIP 15uH
L308	1-408-783-00	s INDUCTOR, CHIP 33uH
L309	1-408-970-21	s INDUCTOR 10uH
L310	1-408-982-11	s INDUCTOR 100uH
L312	1-408-982-11	s INDUCTOR 100uH
L401	1-408-782-11	s INDUCTOR, CHIP 27uH
L402	1-408-970-21	s INDUCTOR 10uH
L501	1-408-984-21	s INDUCTOR 150uH
L502	1-408-781-00	s INDUCTOR, CHIP 22uH
L503	1-408-765-21	s INDUCTOR, CHIP 1uH
L504	1-408-765-21	s INDUCTOR, CHIP 1uH
L505	1-408-776-00	s INDUCTOR, CHIP 8.2uH
L506	1-408-982-11	s INDUCTOR 100uH
L510	1-408-777-00	s INDUCTOR, CHIP 10uH
L601	1-408-982-11	s INDUCTOR 100uH
L602	1-408-792-00	s INDUCTOR, CHIP 180uH
L603	1-408-781-00	s INDUCTOR, CHIP 22uH
L604	1-408-789-21	s INDUCTOR, CHIP 100uH
L605	1-408-790-00	s INDUCTOR, CHIP 120uH
L606	1-408-793-21	s INDUCTOR, CHIP 220uH
L701	1-408-780-21	s INDUCTOR, CHIP 18uH
L702	1-408-795-21	s INDUCTOR, CHIP 330uH
L705	1-408-978-21	s INDUCTOR 47uH

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Ref. No. or Q'ty	Part No.	SP Description
L710	1-410-476-11	s INDUCTOR 33uH
L801	1-408-781-00	s INDUCTOR, CHIP 22uH
L802	1-408-982-11	s INDUCTOR 100uH
L803	1-408-795-21	s INDUCTOR, CHIP 330uH
LV501	1-404-594-11	s COIL, VAR
Q101	8-729-200-86	s TRANSISTOR 2SC2714-O
Q102	8-729-901-04	s TRANSISTOR DTA114EK
Q103	8-729-200-86	s TRANSISTOR 2SC2714-O
Q104	8-729-901-01	s TRANSISTOR DTC144EK
Q105	8-729-904-07	s TRANSISTOR FMG2
Q107	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q110	8-729-901-01	s TRANSISTOR DTC144EK
Q111	8-729-200-86	s TRANSISTOR 2SC2714-O
Q112	8-729-901-01	s TRANSISTOR DTC144EK
Q113	8-729-200-86	s TRANSISTOR 2SC2714-O
Q116	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q117	8-729-200-86	s TRANSISTOR 2SC2714-O
Q118	8-729-200-86	s TRANSISTOR 2SC2714-O
Q119	8-729-200-86	s TRANSISTOR 2SC2714-O
Q120	8-729-200-86	s TRANSISTOR 2SC2714-O
Q121	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q122	8-729-901-01	s TRANSISTOR DTC144EK
Q123	8-729-901-01	s TRANSISTOR DTC144EK
Q124	8-729-901-06	s TRANSISTOR DTA144EK
Q125	8-729-901-01	s TRANSISTOR DTC144EK
Q126	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q127	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q128	8-729-202-38	s TRANSISTOR 2SC3326N
Q129	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q130	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q131	8-729-216-22	s TRANSISTOR 2SA1162
Q132	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q181	8-729-907-46	s TRANSISTOR 1M21
Q182	8-729-903-10	s TRANSISTOR FMW1
Q183	8-729-200-86	s TRANSISTOR 2SC2714-O
Q184	8-729-216-22	s TRANSISTOR 2SA1162
Q209	8-729-200-86	s TRANSISTOR 2SC2714-O
Q210	8-729-200-86	s TRANSISTOR 2SC2714-O
Q211	8-729-200-86	s TRANSISTOR 2SC2714-O
Q212	8-729-901-01	s TRANSISTOR DTC144EK
Q213	8-729-901-06	s TRANSISTOR DTA144EK
Q214	8-729-200-86	s TRANSISTOR 2SC2714-O
Q215	8-729-902-96	s TRANSISTOR FMS1
Q217	8-729-200-86	s TRANSISTOR 2SC2714-O
Q218	8-729-200-86	s TRANSISTOR 2SC2714-O
Q301	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q302	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q305	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q306	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q307	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q309	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q310	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q311	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q312	8-729-901-06	s TRANSISTOR DTA144EK
Q313	8-729-216-22	s TRANSISTOR 2SA1162
Q314	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q315	8-729-201-27	s TRANSISTOR 2SC2715-Y
Q316	8-729-901-01	s TRANSISTOR DTC144EK

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
Q317	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q318	8-729-901-06 s	TRANSISTOR DTA144EK
Q319	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q320	8-729-901-01 s	TRANSISTOR DTC144EK
Q321	8-729-901-01 s	TRANSISTOR DTC144EK
Q322	8-729-216-22 s	TRANSISTOR 2SA1162
Q323	8-729-901-01 s	TRANSISTOR DTC144EK
Q324	8-729-901-01 s	TRANSISTOR DTC144EK
Q325	8-729-901-06 s	TRANSISTOR DTA144EK
Q326	8-729-901-06 s	TRANSISTOR DTA144EK
Q327	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q328	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q330	8-729-901-06 s	TRANSISTOR DTA144EK
Q389	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q401	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q402	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q403	8-729-901-01 s	TRANSISTOR DTC144EK
Q404	8-729-901-01 s	TRANSISTOR DTC144EK
Q405	8-729-901-06 s	TRANSISTOR DTA144EK
Q406	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q407	8-729-216-22 s	TRANSISTOR 2SA1162
Q408	8-729-216-22 s	TRANSISTOR 2SA1162
Q409	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q410	8-729-216-22 s	TRANSISTOR 2SA1162
Q411	8-729-901-01 s	TRANSISTOR DTC144EK
Q412	8-729-901-01 s	TRANSISTOR DTC144EK
Q413	8-729-901-01 s	TRANSISTOR DTC144EK
Q414	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q415	8-729-216-22 s	TRANSISTOR 2SA1162
Q416	8-729-216-22 s	TRANSISTOR 2SA1162
Q417	8-729-901-01 s	TRANSISTOR DTC144EK
Q418	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q419	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q420	8-729-202-38 s	TRANSISTOR 2SC3326N
Q421	8-729-202-38 s	TRANSISTOR 2SC3326N
Q422	8-729-201-27 s	TRANSISTOR 2SC2715-Y
201-27 s	TRANSISTOR 2SC2715-Y	
Q424	8-729-901-01 s	TRANSISTOR DTC144EK
Q425	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q426	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q427	8-729-216-22 s	TRANSISTOR 2SA1162
Q428	8-729-216-22 s	TRANSISTOR 2SA1162
Q429	8-729-901-01 s	TRANSISTOR DTC144EK
Q430	8-729-901-01 s	TRANSISTOR DTC144EK
Q431	8-729-216-22 s	TRANSISTOR 2SA1162
Q501	8-729-901-06 s	TRANSISTOR DTA144EK
Q502	8-729-901-01 s	TRANSISTOR DTC144EK
Q503	8-729-901-00 s	TRANSISTOR DTC124EK
Q504	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q601	8-729-901-01 s	TRANSISTOR DTC144EK
Q603	8-729-901-01 s	TRANSISTOR DTC144EK
Q604	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q605	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q606	8-729-901-01 s	TRANSISTOR DTC144EK
Q607	8-72	
Q608	8-729-216-22 s	TRANSISTOR 2SA1162
Q609	8-729-901-00 s	TRANSISTOR DTC124EK
Q610	8-729-904-04 s	TRANSISTOR FMS2

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Ref. No. or Q'ty	Part No.	SP Description
Q611	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q612	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q613	8-729-900-89 s	TRANSISTOR DTC144ES
Q701	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q702	8-729-202-38 s	TRANSISTOR 2SC3326N
Q703	8-729-202-38 s	TRANSISTOR 2SC3326N
Q704	8-729-216-22 s	TRANSISTOR 2SA1162
Q706	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q707	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q710	8-729-901-01 s	TRANSISTOR DTC144EK
Q711	8-729-901-01 s	TRANSISTOR DTC144EK
Q712	8-729-901-01 s	TRANSISTOR DTC144EK
Q720	8-729-200-86 s	TRANSISTOR 2SC2714-0
Q721	8-729-200-86 s	TRANSISTOR 2SC2714-0
Q722	8-729-200-86 s	TRANSISTOR 2SC2714-0
Q723	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q724	8-729-901-01 s	TRANSISTOR DTC144EK
Q801	8-729-901-01 s	TRANSISTOR DTC144EK
Q802	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q803	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q804	8-729-201-27 s	TRANSISTOR 2SC2715-Y
Q805	8-729-216-22 s	TRANSISTOR 2SA1162
Q811	8-729-901-01 s	TRANSISTOR DTC144EK
Q901	8-729-901-01 s	TRANSISTOR DTC144EK
Q902	8-729-901-01 s	TRANSISTOR DTC144EK
Q903	8-729-104-25 s	TRANSISTOR 2SB804-AV
Q904	8-729-201-27 s	TRANSISTOR 2SC2715-Y
R115	1-216-639-11 s	METAL, CHIP 330 0.5% 1/10W
R116	1-216-635-11 s	METAL, CHIP 220 0.5% 1/10W
R142	1-216-748-11 s	METAL, CHIP 39K 1% 1/10W
R146	1-216-645-11 s	METAL, CHIP 560 0.5% 1/10W
R160	1-216-643-11 s	METAL, CHIP 470 0.5% 1/10W
R171	1-216-748-11 s	METAL, CHIP 39K 1% 1/10W
R174	1-216-748-11 s	METAL, CHIP 39K 1% 1/10W
R195	1-216-748-11 s	METAL, CHIP 39K 1% 1/10W
R201	1-216-641-11 s	METAL, CHIP 390 0.5% 1/10W
R202	1-215-397-00 s	METAL 100 1% 1/6W
R233	1-216-064-00 s	METAL, CHIP 4.3K 5% 1/10W
R243	1-216-643-11 s	METAL, CHIP 470 0.5% 1/10W
R244	1-216-673-11 s	METAL, CHIP 8.2K 0.5% 1/10W
R302	1-216-651-11 s	METAL, CHIP 1K 0.5% 1/10W
R303	1-216-659-11 s	METAL, CHIP 2.2K 0.5% 1/10W
R304	1-216-673-11 s	METAL, CHIP 8.2K 0.5% 1/10W
R305	1-216-677-11 s	METAL, CHIP 12K 0.5% 1/10W
R313	1-216-633-11 s	METAL, CHIP 180 0.5% 1/10W
R316	1-216-673-11 s	METAL, CHIP 8.2K 0.5% 1/10W
R317	1-216-670-11 s	METAL, CHIP 6.2K 0.5% 1/10W
R321	1-216-032-00 s	METAL, CHIP 200 5% 1/10W
R323	1-216-643-11 s	METAL, CHIP 470 0.5% 1/10W
R329	1-216-653-11 s	METAL, CHIP 1.2K 0.5% 1/10W
R332	1-216-645-11 s	METAL, CHIP 560 0.5% 1/10W
R333	1-216-623-11 s	METAL, CHIP 68 0.5% 1/10W
R340	1-216-653-11 s	METAL, CHIP 1.2K 0.5% 1/10W
R341	1-216-641-11 s	METAL, CHIP 390 0.5% 1/10W
R365	1-216-667-11 s	METAL, CHIP 4.7K 0.5% 1/10W
R403	1-216-667-11 s	METAL, CHIP 4.7K 0.5% 1/10W
R404	1-216-654-11 s	METAL, CHIP 1.3K 0.5% 1/10W
R409	1-216-653-11 s	METAL, CHIP 1.2K 0.5% 1/10W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
R428	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
R435	1-216-693-11	s METAL, CHIP 56K 0.5% 1/10W
R436	1-216-663-11	s METAL, CHIP 3.3K 0.5% 1/10W
R437	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R438	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R439	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R441	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R446	1-216-665-11	s METAL, CHIP 3.9K 0.5% 1/10W
R447	1-216-679-11	s METAL, CHIP 15K 0.5% 1/10W
R451	1-216-643-11	s METAL, CHIP 470 0.5% 1/10W
R452	1-216-643-11	s METAL, CHIP 470 0.5% 1/10W
R453	1-216-659-11	s METAL, CHIP 2.2K 0.5% 1/10W
R454	1-216-663-11	s METAL, CHIP 3.3K 0.5% 1/10W
R455	1-216-653-11	s METAL, CHIP 1.2K 0.5% 1/10W
R466	1-216-643-11	s METAL, CHIP 470 0.5% 1/10W
R467	1-216-641-11	s METAL, CHIP 390 0.5% 1/10W
R475	1-216-058-00	s METAL, CHIP 2.4K 5% 1/10W
R483	1-216-082-00	s METAL, CHIP 24K 5% 1/10W
R501	1-216-643-11	s METAL, CHIP 470 0.5% 1/10W
R502	1-216-665-11	s METAL, CHIP 3.9K 0.5% 1/10W
R503	1-216-643-11	s METAL, CHIP 470 0.5% 1/10W
R504	1-216-661-11	s METAL, CHIP 2.7K 0.5% 1/10W
R505	1-216-653-11	s METAL, CHIP 1.2K 0.5% 1/10W
R510	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R511	1-216-647-11	s METAL, CHIP 680 0.5% 1/10W
R512	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R513	1-216-645-11	s METAL, CHIP 560 0.5% 1/10W
R514	1-216-679-11	s METAL, CHIP 15K 0.5% 1/10W
R515	1-216-699-11	s METAL, CHIP 100K 0.5% 1/10W
R516	1-216-659-11	s METAL, CHIP 2.2K 0.5% 1/10W
R517	1-216-641-11	s METAL, CHIP 390 0.5% 1/10W
R522	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
R530	1-216-629-11	s METAL, CHIP 120 0.5% 1/10W
R531	1-216-627-11	s METAL, CHIP 100 0.5% 1/10W
R532	1-216-611-11	s METAL, CHIP 22 0.5% 1/10W
R537	1-216-641-11	s METAL, CHIP 390 0.5% 1/10W
R541	1-216-629-11	s METAL, CHIP 120 0.5% 1/10W
R542	1-216-637-11	s METAL, CHIP 270 0.5% 1/10W
R543	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
R544	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
R603	1-216-639-11	s METAL, CHIP 330 0.5% 1/10W
R605	1-216-669-11	s METAL, CHIP 5.6K 0.5% 1/10W
R606	1-216-683-11	s METAL, CHIP 22K 0.5% 1/10W
R607	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R613	1-216-655-11	s METAL, CHIP 1.5K 0.5% 1/10W
R614	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R618	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R629	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R632	1-216-645-11	s METAL, CHIP 560 0.5% 1/10W
R633	1-216-659-11	s METAL, CHIP 2.2K 0.5% 1/10W
R640	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R641	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R663	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R664	1-216-655-11	s METAL, CHIP 1.5K 0.5% 1/10W
R675	1-216-106-00	s METAL, CHIP 240K 5% 1/10W
R676	1-216-106-00	s METAL, CHIP 240K 5% 1/10W
R678	1-249-429-11	s CARBON 10K 5% 1/4W
R704	1-216-645-11	s METAL, CHIP 560 0.5% 1/10W
R705	1-216-635-11	s METAL, CHIP 220 0.5% 1/10W

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Ref. No. or Q'ty	Part No.	SP Description
R707	1-216-651-11	s METAL, CHIP 1K 0.5% 1/10W
R709	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R710	1-216-643-11	s METAL, CHIP 470 0.5% 1/10W
R711	1-216-645-11	s METAL, CHIP 560 0.5% 1/10W
R748	1-249-405-11	s CARBON 100 5% 1/4W
R761	1-216-034-00	s METAL, CHIP 240 5% 1/10W
R774	1-216-660-11	s METAL, CHIP 2.4K 0.5% 1/10W
RV101	1-230-869-11	s RES, ADJ, METAL 4.7K
RV201	1-230-867-11	s RES, ADJ, METAL 1K
RV202	1-230-868-11	s RES, ADJ, METAL 2.2K
RV301	1-230-869-11	s RES, ADJ, METAL 4.7K
RV302	1-230-870-11	s RES, ADJ, METAL 10K
RV303	1-230-870-11	s RES, ADJ, METAL 10K
RV304	1-230-870-11	s RES, ADJ, METAL 10K
RV305	1-230-875-21	s RES, ADJ, METAL 220K
RV401	1-230-873-11	s RES, ADJ, METAL 47K
RV402	1-230-869-11	s RES, ADJ, METAL 4.7K
RV403	1-230-868-11	s RES, ADJ, METAL 2.2K
RV404	1-230-868-11	s RES, ADJ, METAL 2.2K
RV405	1-230-866-11	s RES, ADJ, METAL 470
RV501	1-230-870-11	s RES, ADJ, METAL 10K
RV502	1-230-870-11	s RES, ADJ, METAL 10K
RV601	1-230-871-11	s RES, ADJ, METAL 22K
RV602	1-230-870-11	s RES, ADJ, METAL 10K
RV700	1-230-868-11	s RES, ADJ, METAL 2.2K
RV801	1-230-873-11	s RES, ADJ, METAL 47K
RV802	1-230-875-21	s RES, ADJ, METAL 220K
T101	1-409-466-21	s TRAP 1.5/1.7MHz
T501	1-235-437-11	s FILTER, BANDPASS 4.43MHz
T601	1-409-396-11	s TRAP, CHROMA
T602	1-409-394-11	s TRAP, CHROMA 4.43MHz
X501	1-567-347-11	s RESONATOR, CERAMIC 13.301MHz
X601	1-567-504-11	s CRYSTAL 4.433619MHz
X602	1-567-827-11	s CRYSTAL 5.85938MHz

HP-42 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-629-477-11	o PRINTED CIRCUIT BOARD, HP-42
C1	1-161-379-00	s CERAMIC 0.01uF 20% 25V
CN1011	1-507-854-00	s JACK, PHONE
R1	1-249-406-11	s CARBON 120 5% 1/4W
R2	1-249-406-11	s CARBON 120 5% 1/4W
RV1	1-237-703-11	s RES, VAR CARBON 2K/2K

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

IG-4 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7070-955-A o MOUNTED CIRCUIT BOARD, IG-4
All of the component parts on the IG-4 Board are
supplied together with when you order SE-10(P) Board.

C024 1-164-232-11 s CERAMIC 0.01uF 10% 100V
C025 1-164-232-11 s CERAMIC 0.01uF 10% 100V
C026 1-164-232-11 s CERAMIC 0.01uF 10% 100V
C027 1-164-232-11 s CERAMIC 0.01uF 10% 100V
CNO04 1-566-945-11 s CONNECTOR, BOARD TO BOARD 18P
CNO05 1-566-946-11 s CONNECTOR, BOARD TO BOARD 22P
CNO06 1-566-945-11 s CONNECTOR, BOARD TO BOARD 18P
CNO07 1-566-945-11 s CONNECTOR, BOARD TO BOARD 18P

KY-162 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7061-779-A o MOUNTED CIRCUIT BOARD, KY-162
1pc 3-718-657-01 o HOLDER, LED
BT1 A1-528-229-11 o BATTERY, LITHIUM CR-2450
C2 1-162-210-31 s CERAMIC 30PF 5% 50V
C3 1-162-210-31 s CERAMIC 30PF 5% 50V
C4 1-130-491-00 s MYLAR 0.047uF 5% 50V
C6 1-126-176-11 s ELECT 220uF 20% 10V
C7 1-130-491-00 s MYLAR 0.047uF 5% 50V
C8 1-125-513-11 s DOUBLE LAYERS 0.047 FARAD 5.5V
C9 1-126-094-11 s ELECT 4.7uF 20% 35V
C10 1-161-379-00 s CERAMIC 0.01uF 20% 25V
C11 1-130-491-00 s MYLAR 0.047uF 5% 50V
C12 1-162-210-31 s CERAMIC 30PF 5% 50V
C13 1-162-210-31 s CERAMIC 30PF 5% 50V
C14 1-130-491-00 s MYLAR 0.047uF 5% 50V
C16 1-130-491-00 s MYLAR 0.047uF 5% 50V
C17 1-126-094-11 s ELECT 4.7uF 20% 35V
C18 1-102-106-00 s CERAMIC 100PF 10% 50V
D1 8-719-911-19 s DIODE 1SS119
D10 8-719-911-19 s DIODE 1SS119
D12 8-719-911-19 s DIODE 1SS119
D14 8-719-911-19 s DIODE 1SS119
D15 8-719-911-19 s DIODE 1SS119
D16 8-719-911-19 s DIODE 1SS119
D17 8-719-911-19 s DIODE 1SS119
D18 8-719-911-19 s DIODE 1SS119
D19 8-719-911-19 s DIODE 1SS119
D23 8-719-911-19 s DIODE 1SS119
D24 8-719-911-19 s DIODE 1SS119
D29 A8-719-104-10 s DIODE 1SS99
D45 8-719-911-19 s DIODE 1SS119
D46 8-719-911-19 s DIODE 1SS119
D48 8-719-200-02 s DIODE 10E2
D49 8-719-911-19 s DIODE 1SS119
D51 A8-719-104-10 s DIODE 1SS99
D52 8-719-911-19 s DIODE 1SS119
D54 8-719-911-19 s DIODE 1SS119
D55 8-719-911-19 s DIODE 1SS119
D102 8-719-802-11 s LED TLUG154, GRN
D104 8-719-939-39 s LED GL5HD8, RED
D108 8-719-939-39 s LED GL5HD8, RED
D109 8-719-939-39 s LED GL5HD8, RED
D110 8-719-939-39 s LED GL5HD8, RED
D111 8-719-939-39 s LED GL5HD8, RED
D112 8-719-939-39 s LED GL5HD8, RED
D113 8-719-939-39 s LED GL5HD8, RED
D114 8-719-820-28 s LED TLG-256, GRN
D115 8-719-820-28 s LED TLG-256, GRN
D116 8-719-939-39 s LED GL5HD8, RED
D117 8-719-802-11 s LED TLUG154, GRN
IC1 8-759-605-23 s IC M50747H-601SP
IC4 8-759-645-16 s IC M54516P
IC5 8-759-600-68 s IC M54562P
IC6 8-759-982-21 s IC RC78L05A
IC7 8-759-937-29 s IC MB88201H-539N
Q2 8-729-900-67 s TRANSISTOR DTA124XS
Q3 8-729-900-67 s TRANSISTOR DTA124XS

Note: Please see pages 14-15 thru 14-18 for the parts that
are not listed in the parts list.

(KY-162 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q4	8-729-900-67	s TRANSISTOR DTA124XS
Q5	8-729-281-52	s TRANSISTOR 2SC1815-Y
Q6	8-729-281-52	s TRANSISTOR 2SC1815-Y
Q15	8-729-900-89	s TRANSISTOR DTC144ES
R8	1-249-417-11	s CARBON 1K 5% 1/4W
R9	1-249-417-11	s CARBON 1K 5% 1/4W
R10	1-249-417-11	s CARBON 1K 5% 1/4W
R11	1-249-417-11	s CARBON 1K 5% 1/4W
R12	1-249-417-11	s CARBON 1K 5% 1/4W
R13	1-249-417-11	s CARBON 1K 5% 1/4W
R14	1-249-417-11	s CARBON 1K 5% 1/4W
R15	1-249-417-11	s CARBON 1K 5% 1/4W
R16	1-249-436-11	s CARBON 39K 5% 1/4W
R17	1-249-436-11	s CARBON 39K 5% 1/4W
R18	1-249-436-11	s CARBON 39K 5% 1/4W
R19	1-249-436-11	s CARBON 39K 5% 1/4W
R20	1-249-436-11	s CARBON 39K 5% 1/4W
R21	1-249-436-11	s CARBON 39K 5% 1/4W
R22	1-249-436-11	s CARBON 39K 5% 1/4W
R23	1-249-436-11	s CARBON 39K 5% 1/4W
R25	1-249-404-00	s CARBON 82 5% 1/4W
R26	1-249-404-00	s CARBON 82 5% 1/4W
R27	1-249-404-00	s CARBON 82 5% 1/4W
R29	1-249-404-00	s CARBON 82 5% 1/4W
R30	1-249-404-00	s CARBON 82 5% 1/4W
R31	1-249-404-00	s CARBON 82 5% 1/4W
R32	1-247-903-00	s CARBON 1M 5% 1/4W
R33	1-249-422-11	s CARBON 2.7K 5% 1/4W
R34	1-249-433-11	s CARBON 22K 5% 1/4W
R35	1-249-433-11	s CARBON 22K 5% 1/4W
R36	1-249-425-11	s CARBON 4.7K 5% 1/4W
R37	1-249-422-11	s CARBON 2.7K 5% 1/4W
R38	1-249-429-11	s CARBON 10K 5% 1/4W
R39	1-249-437-11	s CARBON 47K 5% 1/4W
R40	1-249-437-11	s CARBON 47K 5% 1/4W
R41	1-249-429-11	s CARBON 10K 5% 1/4W
R44	1-249-413-11	s CARBON 470 5% 1/4W
R45	1-249-421-11	s CARBON 2.2K 5% 1/4W
R48	1-249-437-11	s CARBON 47K 5% 1/4W
R49	1-249-429-11	s CARBON 10K 5% 1/4W
R50	1-249-417-11	s CARBON 1K 5% 1/4W
R51	1-249-417-11	s CARBON 1K 5% 1/4W
R52	1-249-417-11	s CARBON 1K 5% 1/4W
R53	1-249-417-11	s CARBON 1K 5% 1/4W
R54	1-249-429-11	s CARBON 10K 5% 1/4W
R55	1-249-429-11	s CARBON 10K 5% 1/4W
R56	1-249-429-11	s CARBON 10K 5% 1/4W
R57	1-249-429-11	s CARBON 10K 5% 1/4W
R58	1-249-423-11	s CARBON 3.3K 5% 1/4W
R59	1-249-429-11	s CARBON 10K 5% 1/4W
R73	1-249-429-11	s CARBON 10K 5% 1/4W
R75	1-249-433-11	s CARBON 22K 5% 1/4W
R84	1-249-429-11	s CARBON 10K 5% 1/4W
R85	1-249-429-11	s CARBON 10K 5% 1/4W
R86	1-249-417-11	s CARBON 1K 5% 1/4W
R87	1-249-429-11	s CARBON 10K 5% 1/4W
R88	1-249-423-11	s CARBON 3.3K 5% 1/4W
R89	1-249-429-11	s CARBON 10K 5% 1/4W
R96	1-249-429-11	s CARBON 10K 5% 1/4W

(KY-162 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R97	1-249-437-11	s CARBON 47K 5% 1/4W
R98	1-249-401-11	s CARBON 47 5% 1/4W
R99	1-249-401-11	s CARBON 47 5% 1/4W
R101	1-249-403-11	s CARBON 68 5% 1/4W
RB1	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB2	1-231-410-00	s RESISTOR BLOCK 10Kx8
S1	1-552-539-00	s SWITCH, TACTILE
S10	1-552-539-00	s SWITCH, TACTILE
S12	1-552-539-00	s SWITCH, TACTILE
S14	1-552-539-00	s SWITCH, TACTILE
S15	1-552-539-00	s SWITCH, TACTILE
S16	1-552-539-00	s SWITCH, TACTILE
S17	1-552-539-00	s SWITCH, TACTILE
S18	1-552-539-00	s SWITCH, TACTILE
S19	1-552-539-00	s SWITCH, TACTILE
S23	1-552-539-00	s SWITCH, TACTILE
S24	1-552-539-00	s SWITCH, TACTILE
S29	1-552-539-00	s SWITCH, TACTILE
X1	1-567-869-11	s RESONATOR, CERAMIC 9.83MHZ
X2	1-567-192-11	s RESONATOR, CERAMIC 4.00MHZ

LD-1 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7070-024-A	o MOUNTED CIRCUIT BOARD, LD-1
1pc	1-613-367-11	o PRINTED CIRCUIT BOARD, LD-1
D901	8-719-928-54	s DIODE GL-450S

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

LP-52 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7061-770-A o MOUNTED CIRCUIT BOARD, LP-52

D1	8-719-901-65	s	DIODE LT-9200H
D2	8-719-820-72	s	DIODE TLUY144
D3	8-719-901-65	s	DIODE LT-9200H
D4	8-719-820-73	s	DIODE TLUG144
D5	8-719-901-66	s	DIODE LT-9200N
D6	8-719-820-72	s	DIODE TLUY144
D7	8-719-901-66	s	DIODE LT-9200N
R1	1-249-404-00	s	CARBON 82 5% 1/4W
R2	1-249-404-00	s	CARBON 82 5% 1/4W
R3	1-249-403-11	s	CARBON 68 5% 1/4W
R4	1-249-404-00	s	CARBON 82 5% 1/4W
R5	1-249-404-00	s	CARBON 82 5% 1/4W
R6	1-249-403-11	s	CARBON 68 5% 1/4W
R7	1-249-404-00	s	CARBON 82 5% 1/4W
R8	1-249-404-00	s	CARBON 82 5% 1/4W
R9	1-249-404-00	s	CARBON 82 5% 1/4W
R10	1-249-404-00	s	CARBON 82 5% 1/4W

MB-19 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7061-824-A o MOUNTED CIRCUIT BOARD, MB-19
This board includes PA-27 and PD-19 Boards.

1pc 4-911-047-01 o VIBRATION CONTROL (D)

C609	1-124-234-00	s	ELECT 22uF 20% 16V
C652	1-124-234-00	s	ELECT 22uF 20% 16V
C662	1-124-234-00	s	ELECT 22uF 20% 16V
C671	1-124-225-00	s	ELECT 100uF 20% 6.3V
C672	1-135-091-00	s	TANTALUM, CHIP 1uF 10% 16V
C673	1-124-225-00	s	ELECT 100uF 20% 6.3V
C674	1-164-232-11	s	CERAMIC 0.01uF 10% 100V
C676	1-124-225-00	s	ELECT 100uF 20% 6.3V
C678	1-124-225-00	s	ELECT 100uF 20% 6.3V
C679	1-164-232-11	s	CERAMIC 0.01uF 10% 100V
C680	1-135-155-21	s	TANTAL CHIP 4.7uF 10% 16V
C681	1-124-225-00	s	ELECT 100uF 20% 6.3V
C682	1-135-157-21	s	TANTALUM, CHIP 10uF 20% 6.3V
C683	1-164-232-11	s	CERAMIC 0.01uF 10% 100V
CN601	1-566-943-11	s	CONNECTOR, BOARD TO BOARD 18P
CN602	1-566-944-11	s	CONNECTOR, BOARD TO BOARD 22P
D601	8-719-104-34	s	DIODE 1S2835
D602	8-719-104-34	s	DIODE 1S2835
D603	8-719-104-34	s	DIODE 1S2835
D604	8-719-400-18	s	DIODE 1S2837-T1
D641	8-719-800-76	s	DIODE 1SS226
D642	8-719-800-76	s	DIODE 1SS226
IC601	8-759-149-34	s	IC UPD75106G-591-1B
IC603	8-759-208-11	s	IC TC4053BFHB
IC651	8-759-603-27	s	IC M5201FP
IC661	8-759-603-27	s	IC M5201FP
IC671	8-741-150-50	s	IC SBX1505-01
L601	1-408-970-21	s	INDUCTOR 10uH
L602	1-408-970-21	s	INDUCTOR 10uH
L603	1-408-970-21	s	INDUCTOR 10uH
L604	1-408-948-00	s	INDUCTOR 220uH
L605	1-408-948-00	s	INDUCTOR 220uH
L641	1-410-393-11	s	INDUCTOR, CHIP 100uH
L671	1-408-948-00	s	INDUCTOR 220uH
Q601	8-729-901-06	s	TRANSISTOR DTA144EK
Q602	8-729-901-01	s	TRANSISTOR DTC144EK
Q603	8-729-901-01	s	TRANSISTOR DTC144EK
Q604	8-729-901-01	s	TRANSISTOR DTC144EK
Q605	8-729-901-06	s	TRANSISTOR DTA144EK
Q606	8-729-901-06	s	TRANSISTOR DTA144EK
Q607	8-729-901-01	s	TRANSISTOR DTC144EK
Q608	8-729-901-01	s	TRANSISTOR DTC144EK
Q609	8-729-901-06	s	TRANSISTOR DTA144EK
Q671	8-729-100-66	s	TRANSISTOR 2SC1623
R641	1-216-072-00	s	METAL, CHIP 9.1K 5% 1/10W
R645	1-216-072-00	s	METAL, CHIP 9.1K 5% 1/10W
R673	1-216-052-00	s	METAL, CHIP 1.3K 5% 1/10W
S641	1-554-371-51	s	SWITCH, TACTILE
S642	1-554-371-51	s	SWITCH, TACTILE
S643	1-554-371-51	s	SWITCH, TACTILE
S644	1-554-371-51	s	SWITCH, TACTILE
S645	1-554-371-51	s	SWITCH, TACTILE

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(MB-19 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
S646	1-554-371-51	s SWITCH, TACTILE
S647	1-554-371-51	s SWITCH, TACTILE
S648	1-570-909-21	s SWITCH, PUSH
S649	1-554-371-51	s SWITCH, TACTILE
T603	1-235-398-11	s FILTER, BANDPASS
T651	1-235-900-11	s FILTER, LOW-PASS
T661	1-235-900-11	s FILTER, LOW-PASS
X601	1-567-121-00	s CRYSTAL, 4.194304MHz

MC-28 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-622-222-11	o PRINTED CIRCUIT BOARD, MC-28
C1	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C2	1-161-379-00	s CERAMIC 0.01uF 20% 25V
CN1009	1-507-797-21	s JACK, PIN 2P, FEMALE

MD-23(P) BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7062-168-A	o MOUNTED CIRCUIT BOARD, MD-23 (P) This board includes FP-122 and FP-84 Boards.
C801	1-124-465-00	s ELECT 0.47uF 20% 50V
C802	1-124-464-11	s ELECT 0.22MF 20% 50V
C804	1-126-160-11	s ELECT 1uF 20% 50V
C806	1-126-151-11	s ELECT, NONPOLAR 4.7uF 20% 16V
C808	1-126-162-11	s ELECT 3.3uF 20% 50V
C809	1-124-584-00	s ELECT 100uF 20% 10V
C810	1-126-096-11	s ELECT 10uF 20% 35V
C811	1-126-096-11	s ELECT 10uF 20% 35V
C812	1-126-096-11	s ELECT 10uF 20% 35V
C813	1-126-160-11	s ELECT 1uF 20% 50V
C814	1-126-160-11	s ELECT 1uF 20% 50V
C815	1-126-160-11	s ELECT 1uF 20% 50V
C816	1-124-229-00	s ELECT 33uF 20% 10V
C817	1-124-229-00	s ELECT 33uF 20% 10V
C818	1-124-229-00	s ELECT 33uF 20% 10V
C821	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C822	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C825	1-126-162-11	s ELECT 3.3uF 20% 50V
C835	1-126-501-11	s ELECT, NONPOLAR 0.15uF 20% 50V
C836	1-164-157-11	s CERAMIC, CHIP 0.068uF 10% 25V
C837	1-124-464-11	s ELECT 0.22MF 20% 50V
C838	1-124-589-11	s ELECT 47uF 20% 16V
C839	1-126-529-11	s ELECT, NONPOLAR 0.47uF 20% 50V
C840	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C841	1-124-589-11	s ELECT 47uF 20% 16V
C901	1-124-234-00	s ELECT 22uF 20% 16V
C902	1-124-234-00	s ELECT 22uF 20% 16V
C903	1-124-234-00	s ELECT 22uF 20% 16V
C904	1-124-234-00	s ELECT 22uF 20% 16V
C905	1-124-257-00	s ELECT 2.2uF 20% 50V
C906	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C908	1-126-096-11	s ELECT 10uF 20% 35V
C909	1-163-077-00	s CERAMIC, CHIP 0.1uF 25V
C910	1-130-491-00	s MYLAR 0.047uF 5% 50V
C911	1-130-491-00	s MYLAR 0.047uF 5% 50V
C912	1-130-483-00	s MYLAR 0.01uF 5% 50V
C913	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C914	1-124-589-11	s ELECT 47uF 20% 16V
C915	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C916	1-126-530-11	s ELECT, NONPOLAR 22uF 20% 10V
C917	1-126-530-11	s ELECT, NONPOLAR 22uF 20% 10V
C918	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C919	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C950	1-164-157-11	s CERAMIC, CHIP 0.068uF 10% 25V
CN807	1-566-527-11	s CONNECTOR, FPC 11P
CN808	1-566-531-11	s CONNECTOR, FPC 15P
CN809	1-566-945-11	s CONNECTOR, BOARD TO BOARD 18P
CN810	1-566-946-11	s CONNECTOR, BOARD TO BOARD 22P
CN811	1-566-367-11	o CONNECTOR, EL-BOW 18P, FEMALE
CN812	1-566-942-11	s CONNECTOR, EL-BOW, 30P, FEMALE
CN814	1-566-367-11	o CONNECTOR, EL-BOW 18P, FEMALE
D803	8-719-200-27	s DIODE E10DS2
D810	8-719-400-18	s DIODE 1S2837-T1
D811	8-719-200-27	s DIODE E10DS2
D901	8-719-400-18	s DIODE 1S2837-T1

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(MD-23(P) BOARD)

Ref. No.
or Q'ty Part No. SP Description

D902 8-719-400-18 s DIODE 1S2837-T1
D903 8-719-400-18 s DIODE 1S2837-T1
D904 8-719-800-76 s DIODE 1SS226
D905 8-719-400-18 s DIODE 1S2837-T1

IC801 8-752-037-08 s IC CXA1109M
IC802 8-759-802-79 s IC LB1616M
IC804 8-759-981-82 s IC RC3414M
IC805 8-759-100-93 s IC UPC393G2
IC806 8-759-207-00 s IC TA7733F

IC807 8-759-107-68 s IC CX20115A
IC808 8-759-700-62 s IC NJM4562D
IC809 8-759-100-94 s IC UPC358G2
IC901 8-759-207-50 s IC TA7745F
IC902 8-759-100-95 s IC UPC324G2

IC903 8-759-925-66 s IC BA6303F
IC904 8-759-208-15 s IC TC4066BFHB

PS801 A1-532-685-00 s LINK, IC 0.8A

Q806 8-729-111-14 s TRANSISTOR 2SA1385-Z-L
Q807 8-729-901-06 s TRANSISTOR DTA144EK
Q809 8-729-143-91 s TRANSISTOR 2SC3518-ZL
Q810 8-729-805-25 s TRANSISTOR 2SB1121-S
Q811 8-729-805-25 s TRANSISTOR 2SB1121-S

Q812 8-729-111-14 s TRANSISTOR 2SA1385-Z-L
Q813 8-729-100-66 s TRANSISTOR 2SC1623
Q820 8-729-143-91 s TRANSISTOR 2SC3518-ZL
Q821 8-729-100-66 s TRANSISTOR 2SC1623
Q880 8-729-100-66 s TRANSISTOR 2SC1623

Q901 8-729-920-82 s TRANSISTOR 2SB1188-QR
Q902 8-729-920-82 s TRANSISTOR 2SB1188-QR
Q903 8-729-920-82 s TRANSISTOR 2SB1188-QR
Q904 8-729-901-06 s TRANSISTOR DTA144EK
Q905 8-729-901-06 s TRANSISTOR DTA144EK

Q906 8-729-901-01 s TRANSISTOR DTC144EK
Q907 8-729-901-01 s TRANSISTOR DTC144EK
Q908 8-729-901-01 s TRANSISTOR DTC144EK
Q909 8-729-901-06 s TRANSISTOR DTA144EK
Q950 8-729-903-97 s TRANSISTOR FMS1FE

R832 1-216-304-11 s METAL, CHIP 3.3 5% 1/10W
R833 1-216-304-11 s METAL, CHIP 3.3 5% 1/10W
R834 1-216-304-11 s METAL, CHIP 3.3 5% 1/10W
R890 1-216-681-11 s METAL, CHIP 18K 0.5% 1/10W
R891 1-216-681-11 s METAL, CHIP 18K 0.5% 1/10W

R923 1-216-748-11 s METAL, CHIP 39K 1% 1/10W
R927 1-216-110-00 s METAL, CHIP 360K 5% 1/10W
R953 1-214-972-00 s METAL 0.22 1% 1/4W

RV801 1-230-520-11 s RES, ADJ, METAL 1K
RV802 1-230-523-11 s RES, ADJ, METAL 10K
RV803 1-230-527-11 s RES, ADJ, METAL 100K
RV901 1-230-529-11 s RES, ADJ, METAL 470K

THP801 1-202-854-00 s THERMISTOR, POSITIVE

MS-4 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7090-029-A s MOUNTED CIRCUIT BOARD, MS-4

MT-57 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7061-773-A o MOUNTED CIRCUIT BOARD, MT-57
2pcs 1-520-506-11 s METER, AUDIO LEVEL
2pcs 3-738-923-01 o HOLDER, LED

D1 8-719-820-27 s LED TLY-256, YEL
D2 8-719-820-27 s LED TLY-256, YEL
D3 8-719-820-27 s LED TLY-256, YEL
D4 8-719-820-27 s LED TLY-256, YEL

R1 1-249-411-11 s CARBON 330 5% 1/4W
R2 1-249-411-11 s CARBON 330 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

PA-27 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7061-826-A o MOUNTED CIRCUIT BOARD, PA-27
All of the component parts on the PA-27 Board are
supplied together with when you order MB-19 Board.

C001	1-163-012-00	s CERAMIC CHIP 1800PF 10% 50V
C002	1-124-225-00	s ELECT 100uF 20% 6.3V
C003	1-126-154-11	s ELECT 47uF 20% 6.3V
C004	1-126-154-11	s ELECT 47uF 20% 6.3V
C005	1-130-490-11	s MYLAR 0.039uF 5% 50V
C007	1-130-479-00	s MYLAR 0.0047uF 5% 50V
C008	1-126-154-11	s ELECT 47uF 20% 6.3V
C010	1-126-154-11	s ELECT 47uF 20% 6.3V
C011	1-130-469-00	s FILM 680PF 5% 50V
C012	1-130-482-00	s MYLAR 0.0082uF 5% 50V
C013	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C014	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C015	1-135-072-21	s TANTALUM, CHIP 0.22uF 10% 35V
C016	1-126-153-11	s ELECT 22uF 20% 6.3V
C018	1-126-153-11	s ELECT 22uF 20% 6.3V
C019	1-126-153-11	s ELECT 22uF 20% 6.3V
C031	1-124-225-00	s ELECT 100uF 20% 6.3V
C032	1-124-225-00	s ELECT 100uF 20% 6.3V
C034	1-126-154-11	s ELECT 47uF 20% 6.3V
C035	1-126-154-11	s ELECT 47uF 20% 6.3V
C037	1-126-154-11	s ELECT 47uF 20% 6.3V
C038	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C039	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C040	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C041	1-109-814-11	s MICA, CHIP 220PF 5% 100V
C042	1-126-154-11	s ELECT 47uF 20% 6.3V
C043	1-126-153-11	s ELECT 22uF 20% 6.3V
C044	1-126-154-11	s ELECT 47uF 20% 6.3V
C051	1-163-012-00	s CERAMIC CHIP 1800PF 10% 50V
C052	1-124-225-00	s ELECT 100uF 20% 6.3V
C053	1-126-154-11	s ELECT 47uF 20% 6.3V
C054	1-126-154-11	s ELECT 47uF 20% 6.3V
C055	1-130-490-11	s MYLAR 0.039uF 5% 50V
C057	1-130-479-00	s MYLAR 0.0047uF 5% 50V
C058	1-126-154-11	s ELECT 47uF 20% 6.3V
C060	1-126-154-11	s ELECT 47uF 20% 6.3V
C061	1-130-469-00	s FILM 680PF 5% 50V
C062	1-130-482-00	s MYLAR 0.0082uF 5% 50V
C063	1-135-149-21	s TANTALUM, CHIP 2.2uF 10% 10V
C064	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C065	1-135-072-21	s TANTALUM, CHIP 0.22uF 10% 35V
C066	1-126-153-11	s ELECT 22uF 20% 6.3V
C068	1-126-153-11	s ELECT 22uF 20% 6.3V
C069	1-126-153-11	s ELECT 22uF 20% 6.3V
CN001	1-563-314-11	s CONNECTOR, BOARD TO BOARD 20P
D031	8-719-104-34	s DIODE 1S2835
D032	8-719-104-34	s DIODE 1S2835
D033	8-719-104-34	s DIODE 1S2835
IC001	8-752-009-90	s IC CX20099
IC002	8-759-981-92	s IC RC4558M
IC003	8-759-981-92	s IC RC4558M
IC004	8-752-322-57	s IC CXD1077M
IC004	8-752-322-57	s IC CXD1077M

(PA-27 BOARD)

Ref. No.
or Q'ty Part No. SP Description

IC005	8-759-908-15	s IC TL431CLP
L001	1-408-793-21	s INDUCTOR, CHIP 220uH
Q001	8-729-202-38	s TRANSISTOR 2SC3326N
Q002	8-729-202-38	s TRANSISTOR 2SC3326N
Q031	8-729-207-70	s TRANSISTOR RN2404
Q031	8-729-805-69	s TRANSISTOR 2SA1341
Q031	8-729-901-06	s TRANSISTOR DTA144EK
Q032	8-729-207-70	s TRANSISTOR RN2404
Q032	8-729-805-69	s TRANSISTOR 2SA1341
Q032	8-729-901-06	s TRANSISTOR DTA144EK
Q033	8-729-207-70	s TRANSISTOR RN2404
Q033	8-729-805-69	s TRANSISTOR 2SA1341
Q033	8-729-901-06	s TRANSISTOR DTA144EK
Q034	8-729-216-22	s TRANSISTOR 2SA1162
Q035	8-729-216-22	s TRANSISTOR 2SA1162
Q051	8-729-202-38	s TRANSISTOR 2SC3326N
Q052	8-729-202-38	s TRANSISTOR 2SC3326N
R002	1-216-078-00	s METAL, CHIP 16K 5% 1/10W
R003	1-216-072-00	s METAL, CHIP 9.1K 5% 1/10W
R012	1-216-677-11	s METAL, CHIP 12K 0.5% 1/10W
R016	1-216-060-00	s METAL, CHIP 3K 5% 1/10W
R017	1-216-058-00	s METAL, CHIP 2.4K 5% 1/10W
R018	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
R032	1-216-700-11	s METAL, CHIP 470K 1% 1/10W
R033	1-216-022-00	s METAL, CHIP 75 5% 1/10W
R036	1-216-653-11	s METAL, CHIP 1.2K 0.5% 1/10W
R037	1-216-661-11	s METAL, CHIP 2.7K 0.5% 1/10W
R039	1-215-401-11	s METAL 150 1% 1/6W
R052	1-216-078-00	s METAL, CHIP 16K 5% 1/10W
R053	1-216-072-00	s METAL, CHIP 9.1K 5% 1/10W
R062	1-216-677-11	s METAL, CHIP 12K 0.5% 1/10W
R066	1-216-060-00	s METAL, CHIP 3K 5% 1/10W
R067	1-216-058-00	s METAL, CHIP 2.4K 5% 1/10W
R068	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
RV001	1-230-524-11	s RES, ADJ, METAL 22K
RV002	1-230-521-11	s RES, ADJ, METAL 2.2K
RV031	1-230-521-11	s RES, ADJ, METAL 2.2K
RV032	1-230-529-11	s RES, ADJ, METAL 470K
RV051	1-230-524-11	s RES, ADJ, METAL 22K
RV052	1-230-521-11	s RES, ADJ, METAL 2.2K

NOTE: Please see pages 14-15 thru 14-18 for the parts that
are not listed in the parts list.

PD-19 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7061-825-A	o MOUNTED CIRCUIT BOARD, PD-19
All of the component parts on the PD-19 Board are supplied together with when you order MB-19 Board.		
C853	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C856	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C858	1-135-145-11	s TANTALUM, CHIP 0.47uF 10% 35V
C859	1-135-180-21	s TANTALUM, CHIP 3.3uF 20% 10V
C860	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C870	1-163-115-00	s CERAMIC, CHIP 82PF 5% 50V
C872	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C873	1-135-157-21	s TANTALUM, CHIP 10uF 20% 6.3V
C875	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C876	1-163-005-11	s CERAMIC, CHIP 470PF 10% 50V
C878	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C880	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
C889	1-135-156-21	s TANTALUM, CHIP 6.8uF 10% 10V
CN851	1-565-107-21	o CONNECTOR, ON BOARD (2MM) 35P
CN852	1-565-107-21	o CONNECTOR, ON BOARD (2MM) 35P
CN853	1-506-777-11	s CONNECTOR, BOARD TO BOARD 20P
D851	8-719-104-34	s DIODE 1S2835
D852	8-719-400-18	s DIODE 1S2837-T1
D853	8-719-400-18	s DIODE 1S2837-T1
IC851	8-752-324-45	s IC CXD1066Q-Z
IC852	8-759-929-17	s IC CXD1051M
IC853	8-752-010-30	s IC CX20103
IC854	8-752-010-20	s IC CX20102
IC855	8-752-331-00	s IC CXK5864BM-12L
IC856	8-759-948-61	s IC CX23011-Z
IC857	8-759-911-19	s IC CX23012
IC858	8-759-972-12	s IC CF77305FT
IC859	8-759-809-68	s IC CXP5024H-079Q
IC860	8-759-972-13	s IC CF77309FR
L851	1-410-393-11	s INDUCTOR, CHIP 100uH
L852	1-410-393-11	s INDUCTOR, CHIP 100uH
L853	1-410-393-11	s INDUCTOR, CHIP 100uH
L855	1-410-393-11	s INDUCTOR, CHIP 100uH
L856	1-410-393-11	s INDUCTOR, CHIP 100uH
L857	1-410-393-11	s INDUCTOR, CHIP 100uH
L858	1-410-393-11	s INDUCTOR, CHIP 100uH
L859	1-410-393-11	s INDUCTOR, CHIP 100uH
L860	1-410-393-11	s INDUCTOR, CHIP 100uH
L861	1-410-393-11	s INDUCTOR, CHIP 100uH
L862	1-410-393-11	s INDUCTOR, CHIP 100uH
Q851	8-729-102-06	s TRANSISTOR 2SC2223
Q851	8-729-102-07	s TRANSISTOR 2SC2223-F13
Q851	8-729-102-07	s TRANSISTOR 2SC2223-F13
Q852	8-729-122-63	s TRANSISTOR 2SA1226
Q852	8-729-122-63	s TRANSISTOR 2SA1226
Q853	8-729-102-06	s TRANSISTOR 2SC2223
Q853	8-729-102-07	s TRANSISTOR 2SC2223-F13
Q853	8-729-102-07	s TRANSISTOR 2SC2223-F13
RV851	1-230-869-11	s RES, ADJ, METAL 4.7K
RV854	1-230-868-11	s RES, ADJ, METAL 2.2K
X851	1-567-669-91	s RESONATOR, LITHIUM
X852	1-567-346-11	s RESONATOR, CERAMIC 0.5MHz

PTC-32 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-564-026-00	o CONTACT, FEMALE, AWG26-30
1pc	1-622-638-11	o PRINTED CIRCUIT BOARD, PTC-32
C1	1-124-234-00	s ELECT 22uF 20% 16V
IC1	8-719-939-50	s PHOTOINTERRUPTER GP-1L52
IC2	8-719-939-50	s PHOTOINTERRUPTER GP-1L52
IC3	8-719-940-86	s PHOTOINTERRUPTER GP-1L53
IC4	8-719-939-50	s PHOTOINTERRUPTER GP-1L52
IC5	8-759-133-90	s IC UPC339C

RM-83 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-635-086-11	o PRINTED CIRCUIT BOARD, RM-83
CN1001	1-563-890-21	s CONNECTOR, D-SUB 9P, FEMALE

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

RP-73 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7061-827-A	o MOUNTED CIRCUIT BOARD, RP-73
All of the component parts on the RP-73 Board are supplied together with when you order FR-43 Board.		
C001	1-162-974-11	s CERAMIC, CHIP 0.01uF 50V
C002	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C003	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C005	1-164-330-21	s CERAMIC, CHIP 0.22uF 5% 16V
C006	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C007	1-163-077-00	s CERAMIC, CHIP 0.1uF 25V
C008	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C009	1-135-161-21	s TANTALUM, CHIP 22uF 10% 10V
C010	1-163-077-00	s CERAMIC, CHIP 0.1uF 25V
C011	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C012	1-164-330-21	s CERAMIC, CHIP 0.22uF 5% 16V
C013	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C015	1-162-974-11	s CERAMIC, CHIP 0.01uF 50V
C016	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C017	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C020	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C021	1-162-974-11	s CERAMIC, CHIP 0.01uF 50V
C022	1-135-091-00	s TANTALUM, CHIP 1uF 10% 16V
C023	1-135-157-21	s TANTALUM, CHIP 10uF 20% 6.3V
C024	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C025	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C027	1-135-091-00	s TANTALUM, CHIP 1uF 10% 16V
C028	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C029	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C030	1-162-974-11	s CERAMIC, CHIP 0.01uF 50V
C031	1-164-218-11	s CERAMIC, CHIP 180PF 50V
C032	1-162-918-11	s CERAMIC, CHIP 18PF 5% 50V
C033	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C034	1-162-912-11	s CERAMIC, CHIP 7PF 50V
C035	1-162-974-11	s CERAMIC, CHIP 0.01uF 50V
C036	1-164-218-11	s CERAMIC, CHIP 180PF 50V
C037	1-162-918-11	s CERAMIC, CHIP 18PF 5% 50V
C038	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C039	1-162-912-11	s CERAMIC, CHIP 7PF 50V
C040	1-162-913-11	s CERAMIC, CHIP 8PF 50V
C041	1-162-913-11	s CERAMIC, CHIP 8PF 50V
C042	1-135-157-21	s TANTALUM, CHIP 10uF 20% 6.3V
C043	1-135-157-21	s TANTALUM, CHIP 10uF 20% 6.3V
C044	1-162-974-11	s CERAMIC, CHIP 0.01uF 50V
D001	8-719-801-41	s DIODE 1SS196
D002	8-719-801-41	s DIODE 1SS196
IC001	8-752-033-00	s IC CXA1234AR
L001	1-410-385-11	s INDUCTOR, CHIP 22uH
L002	1-410-656-11	s INDUCTOR, CHIP 150uH
L004	1-410-393-11	s INDUCTOR, CHIP 100uH
L005	1-410-381-11	s INDUCTOR, CHIP 10uH
L007	1-410-393-11	s INDUCTOR, CHIP 100uH
L008	1-410-384-31	s INDUCTOR, CHIP 18uH
L009	1-410-384-31	s INDUCTOR, CHIP 18uH
Q002	8-729-102-07	s TRANSISTOR 2SC2223-F13
Q003	8-729-102-07	s TRANSISTOR 2SC2223-F13
R005	1-216-824-11	s METAL, CHIP 1.8K 5% 1/16W

(RP-73 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R007	1-216-834-11	s METAL, CHIP 12K 5% 1/16W
R008	1-216-835-11	s METAL, CHIP 15K 5% 1/16W
R014	1-216-824-11	s METAL, CHIP 1.8K 5% 1/16W
R026	1-216-837-11	s METAL, CHIP 22K 5% 1/16W
R027	1-216-833-11	s METAL, CHIP 10K 5% 1/16W
R028	1-216-797-11	s METAL, CHIP 10 5% 1/16W
R029	1-216-812-11	s METAL, CHIP 180 5% 1/16W
R030	1-216-837-11	s METAL, CHIP 22K 5% 1/16W
R031	1-216-833-11	s METAL, CHIP 10K 5% 1/16W
R032	1-216-797-11	s METAL, CHIP 10 5% 1/16W
R033	1-216-812-11	s METAL, CHIP 180 5% 1/16W
RV001	1-230-871-11	s RES, ADJ, METAL 22K
RV002	1-230-871-11	s RES, ADJ, METAL 22K
RV003	1-230-869-11	s RES, ADJ, METAL 4.7K
RV004	1-230-869-11	s RES, ADJ, METAL 4.7K

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

RP-103 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7062-166-A o MOUNTED CIRCUIT BOARD, RP-103
All of the component parts on the RP-103 Board are
supplied together with when you order FR-43 Board.

C001	1-162-974-11 s CERAMIC, CHIP 0.01uF 50V
C002	1-164-232-11 s CERAMIC 0.01uF 10% 100V
C003	1-163-809-11 s CERAMIC, CHIP 0.047uF 10% 25V
C005	1-164-330-21 s CERAMIC, CHIP 0.22uF 5% 16V
C006	1-135-161-21 s TANTALUM, CHIP 22uF 10% 10V
C007	1-163-077-00 s CERAMIC, CHIP 0.1uF 25V
C008	1-164-232-11 s CERAMIC 0.01uF 10% 100V
C009	1-135-161-21 s TANTALUM, CHIP 22uF 10% 10V
C010	1-163-077-00 s CERAMIC, CHIP 0.1uF 25V
C011	1-164-232-11 s CERAMIC 0.01uF 10% 100V
C012	1-164-330-21 s CERAMIC, CHIP 0.22uF 5% 16V
C013	1-163-809-11 s CERAMIC, CHIP 0.047uF 10% 25V
C015	1-162-974-11 s CERAMIC, CHIP 0.01uF 50V
C016	1-164-232-11 s CERAMIC 0.01uF 10% 100V
C017	1-164-232-11 s CERAMIC 0.01uF 10% 100V
C020	1-164-232-11 s CERAMIC 0.01uF 10% 100V
C021	1-162-974-11 s CERAMIC, CHIP 0.01uF 50V
C022	1-135-091-00 s TANTALUM, CHIP 1uF 10% 16V
C023	1-135-157-21 s TANTALUM, CHIP 10uF 20% 6.3V
C024	1-164-232-11 s CERAMIC 0.01uF 10% 100V
C025	1-164-232-11 s CERAMIC 0.01uF 10% 100V
C027	1-135-091-00 s TANTALUM, CHIP 1uF 10% 16V
C029	1-163-809-11 s CERAMIC, CHIP 0.047uF 10% 25V
C030	1-162-974-11 s CERAMIC, CHIP 0.01uF 50V
C031	1-164-218-11 s CERAMIC, CHIP 180PF 50V
C032	1-162-918-11 s CERAMIC, CHIP 18PF 5% 50V
C033	1-163-809-11 s CERAMIC, CHIP 0.047uF 10% 25V
C034	1-162-912-11 s CERAMIC, CHIP 7PF 50V
C035	1-162-974-11 s CERAMIC, CHIP 0.01uF 50V
C036	1-164-218-11 s CERAMIC, CHIP 180PF 50V
C037	1-162-918-11 s CERAMIC, CHIP 18PF 5% 50V
C038	1-163-809-11 s CERAMIC, CHIP 0.047uF 10% 25V
C039	1-162-912-11 s CERAMIC, CHIP 7PF 50V
C040	1-162-913-11 s CERAMIC, CHIP 8PF 50V
C041	1-162-913-11 s CERAMIC, CHIP 8PF 50V
C042	1-135-157-21 s TANTALUM, CHIP 10uF 20% 6.3V
C043	1-135-157-21 s TANTALUM, CHIP 10uF 20% 6.3V
C044	1-162-974-11 s CERAMIC, CHIP 0.01uF 50V
D001	8-719-801-41 s DIODE 1SS196
D002	8-719-801-41 s DIODE 1SS196
IC001	8-752-033-00 s IC CXA1234AR
L001	1-410-385-11 s INDUCTOR, CHIP 22uH
L002	1-410-656-11 s INDUCTOR, CHIP 150uH
L004	1-410-393-11 s INDUCTOR, CHIP 100uH
L005	1-410-381-11 s INDUCTOR, CHIP 10uH
L007	1-410-393-11 s INDUCTOR, CHIP 100uH
L008	1-410-384-31 s INDUCTOR, CHIP 18uH
L009	1-410-384-31 s INDUCTOR, CHIP 18uH
Q002	8-729-102-07 s TRANSISTOR 2SC2223-F13
Q003	8-729-102-07 s TRANSISTOR 2SC2223-F13
R005	1-216-824-11 s METAL, CHIP 1.8K 5% 1/16W
R007	1-216-836-11 s METAL, CHIP 18K 5% 1/16W

(RP-103 BOARD)

Ref. No.
or Q'ty Part No. SP Description

R008	1-216-837-11 s METAL, CHIP 22K 5% 1/16W
R014	1-216-824-11 s METAL, CHIP 1.8K 5% 1/16W
R026	1-216-837-11 s METAL, CHIP 22K 5% 1/16W
R027	1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R028	1-216-797-11 s METAL, CHIP 10 5% 1/16W
R029	1-216-812-11 s METAL, CHIP 180 5% 1/16W
R030	1-216-837-11 s METAL, CHIP 22K 5% 1/16W
R031	1-216-833-11 s METAL, CHIP 10K 5% 1/16W
R032	1-216-797-11 s METAL, CHIP 10 5% 1/16W
R033	1-216-812-11 s METAL, CHIP 180 5% 1/16W
RV002	1-230-871-11 s RES, ADJ, METAL 22K
RV003	1-230-869-11 s RES, ADJ, METAL 4.7K
RV004	1-230-869-11 s RES, ADJ, METAL 4.7K

RS-31 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc	A-7061-818-A o MOUNTED CIRCUIT BOARD, RS-31
1pc	1-559-762-11 o CABLE, FLAT 22P
1pc	3-712-410-01 s HOLDER, RS
CN304	1-563-494-11 o CONNECTOR, FPC 6P
CN305	1-565-211-11 o CONNECTOR, FPC 22P
D320	8-719-800-76 s DIODE 1SS226
D321	8-719-800-76 s DIODE 1SS226
IC301	8-759-908-81 s IC MB3763PF
IC302	8-759-908-81 s IC MB3763PF
PH301	8-719-939-11 s PHOTOINTERRUPTER GP-2S09-B
PH302	8-719-939-11 s PHOTOINTERRUPTER GP-2S09-B
PH303	8-719-939-11 s PHOTOINTERRUPTER GP-2S09-B
PS301	△1-532-727-11 s LINK, IC 0.25A
Q301	8-729-805-25 s TRANSISTOR 2SB1121-S
Q302	8-729-216-22 s TRANSISTOR 2SA1162
Q303	8-729-216-22 s TRANSISTOR 2SA1162
Q304	8-729-216-22 s TRANSISTOR 2SA1162
Q305	8-729-901-01 s TRANSISTOR DTC144EK
Q306	8-729-901-01 s TRANSISTOR DTC144EK
Q307	8-729-901-01 s TRANSISTOR DTC144EK
R302	1-216-174-00 s METAL, CHIP 100 5% 1/8W
R303	1-216-186-00 s METAL, CHIP 330 5% 1/8W

NOTE: Please see pages 14-15 thru 14-18 for the parts that
are not listed in the parts list.

SE-10(P) BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7062-167-A	o MOUNTED CIRCUIT BOARD, SE-10 (P) This board includes IG-4 Board.
C006	1-126-157-11	s ELECT 10uF 20% 16V
C008	1-163-095-00	s CERAMIC, CHIP 12PF 5% 50V
C009	1-163-095-00	s CERAMIC, CHIP 12PF 5% 50V
C012	1-126-094-11	s ELECT 4.7uF 20% 35V
C013	1-126-157-11	s ELECT 10uF 20% 16V
C016	1-163-077-00	s CERAMIC, CHIP 0.1uF 25V
C020	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C022	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C028	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C034	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C101	1-126-157-11	s ELECT 10uF 20% 16V
C102	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C103	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C104	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C110	1-126-320-11	s ELECT, NONPOLAR 10uF 20% 16V
C111	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C112	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C113	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C115	1-126-157-11	s ELECT 10uF 20% 16V
C116	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C118	1-126-157-11	s ELECT 10uF 20% 16V
C120	1-163-209-00	s CERAMIC, CHIP 0.0015uF 5% 50V
C121	1-163-209-00	s CERAMIC, CHIP 0.0015uF 5% 50V
C122	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C127	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C128	1-124-767-00	s ELECT, NONPOLAR 2.2uF 20% 50V
C130	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C131	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C133	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C134	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C136	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C137	1-124-768-11	s ELECT, NONPOLAR 4.7uF 20% 50V
C146	1-101-880-00	s CERAMIC 47PF 5% 50V
C202	1-163-123-00	s CERAMIC, CHIP 180PF 5% 50V
C205	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C206	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C208	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C209	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C210	1-124-234-00	s ELECT 22uF 20% 16V
C211	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C212	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C213	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C214	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C215	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C217	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C218	1-163-989-11	s CERAMIC, CHIP 0.033uF 10% 25V
C219	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C220	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C221	1-124-256-00	s ELECT 1.5uF 20% 50V
C224	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C301	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C302	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C303	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C304	1-124-584-00	s ELECT 100uF 20% 10V
C305	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C306	1-124-584-00	s ELECT 100uF 20% 10V

(SE-10(P) BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C307	1-126-094-11	s ELECT 4.7uF 20% 35V
C308	1-124-257-00	s ELECT 2.2uF 20% 50V
C309	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C310	1-163-077-00	s CERAMIC, CHIP 0.1uF 25V
C401	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C402	1-163-103-00	s CERAMIC, CHIP 27PF 5% 50V
C403	1-126-094-11	s ELECT 4.7uF 20% 35V
C404	1-126-094-11	s ELECT 4.7uF 20% 35V
C405	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C408	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C409	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C412	1-126-157-11	s ELECT 10uF 20% 16V
C503	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C504	1-124-257-00	s ELECT 2.2uF 20% 50V
C506	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C508	1-124-589-11	s ELECT 47uF 20% 16V
C601	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C604	1-124-589-11	s ELECT 47uF 20% 16V
C606	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C607	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C608	1-163-809-11	s CERAMIC, CHIP 0.047uF 10% 25V
C610	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C611	1-126-157-11	s ELECT 10uF 20% 16V
C612	1-126-157-11	s ELECT 10uF 20% 16V
C613	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C614	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C615	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C616	1-164-633-11	s CERAMIC, CHIP 0.1uF 10% 25V
C617	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C620	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C621	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C622	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C623	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C624	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C625	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C626	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C627	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C628	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C629	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C630	1-163-009-11	s CERAMIC, CHIP 0.001uF 10% 50V
C631	1-163-037-11	s CERAMIC, CHIP 0.022uF 10% 25V
C632	1-126-157-11	s ELECT 10uF 20% 16V
C633	1-102-963-00	s CERAMIC 33PF 5% 50V
CN001	1-566-641-11	o CONNECTOR, EL-BOW, 18P, MALE
CN002	1-566-941-11	o CONNECTOR, EL-BOW, 30P, MALE
CN003	1-566-641-11	o CONNECTOR, EL-BOW, 18P, MALE
CN004	1-566-943-11	s CONNECTOR, BOARD TO BOARD 18P
CN005	1-566-944-11	s CONNECTOR, BOARD TO BOARD 22P
CN011	1-565-212-11	s CONNECTOR, FPC 26P
CN012	1-565-211-11	o CONNECTOR, FPC 22P
D003	8-719-400-18	s DIODE 1S2837-T1
D004	8-719-400-18	s DIODE 1S2837-T1
D005	8-719-400-18	s DIODE 1S2837-T1
D006	8-719-104-34	s DIODE 1S2835
D007	8-719-400-18	s DIODE 1S2837-T1
D008	8-719-400-18	s DIODE 1S2837-T1
D009	8-719-400-18	s DIODE 1S2837-T1
D012	8-719-400-18	s DIODE 1S2837-T1

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(SE-10(P) BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D013	8-719-400-18 s	DIODE 1S2837-T1
D015	8-719-104-34 s	DIODE 1S2835
D016	8-719-104-34 s	DIODE 1S2835
D102	8-719-800-76 s	DIODE 1SS226
D103	8-719-800-76 s	DIODE 1SS226
D104	8-719-104-34 s	DIODE 1S2835
D105	8-719-400-18 s	DIODE 1S2837-T1
D106	8-719-400-18 s	DIODE 1S2837-T1
D107	8-719-104-34 s	DIODE 1S2835
D108	8-719-400-18 s	DIODE 1S2837-T1
D109	8-719-400-18 s	DIODE 1S2837-T1
D110	8-719-104-34 s	DIODE 1S2835
D111	8-719-400-18 s	DIODE 1S2837-T1
D112	8-719-104-34 s	DIODE 1S2835
D201	8-719-400-18 s	DIODE 1S2837-T1
D202	8-719-400-18 s	DIODE 1S2837-T1
D203	8-719-105-82 s	DIODE RD5.1M-B2
D203	8-719-105-83 s	DIODE RD5.1M-B3
D301	8-719-400-18 s	DIODE 1S2837-T1
D302	8-719-400-18 s	DIODE 1S2837-T1
D401	8-719-800-76 s	DIODE 1SS226
D701	8-719-400-18 s	DIODE 1S2837-T1
FL201	1-235-611-21 s	FILTER, BANDPASS
FL202	1-235-612-21 s	FILTER, BANDPASS
IC001	8-752-816-72 s	IC CXP80116-692Q
IC002	8-752-816-09 s	IC CXP5048H-228Q
IC003	8-752-815-13 s	IC CXP5048H-222Q
IC004	8-759-144-21 s	IC UPD75106G-573-1B
IC007	8-759-208-15 s	IC TC4066BFHB
IC008	8-759-937-56 s	IC S-8054ALB-LM-S
IC101	8-752-003-50 s	IC CX20035
IC102	8-759-803-47 s	IC LA5005M
IC103	8-759-925-66 s	IC BA6303F
IC104	8-759-981-75 s	IC RC3403AM
IC105	8-759-208-11 s	IC TC4053BFHB
IC106	8-759-971-25 s	IC MB674169U
IC107	8-759-100-94 s	IC UPC358G2
IC108	8-759-208-15 s	IC TC4066BFHB
IC201	8-759-928-56 s	IC CXA1042M
IC202	8-759-100-95 s	IC UPC324G2
IC203	8-759-208-11 s	IC TC4053BFHB
IC204	8-759-927-46 s	IC SN74HCOONS
IC301	8-759-100-94 s	IC UPC358G2
IC302	8-759-208-11 s	IC TC4053BFHB
IC303	8-759-208-11 s	IC TC4053BFHB
IC304	8-759-200-90 s	IC TC4538BF
IC305	8-759-927-46 s	IC SN74HCOONS
IC601	8-759-996-78 s	IC BU3707F
IC602	8-759-927-52 s	IC BA7036LS
IC603	8-759-100-93 s	IC UPC393G2
IC604	8-759-100-95 s	IC UPC324G2
L001	1-408-777-00 s	INDUCTOR, CHIP 10uH
L002	1-408-777-00 s	INDUCTOR, CHIP 10uH
L003	1-408-777-00 s	INDUCTOR, CHIP 10uH
L101	1-408-777-00 s	INDUCTOR, CHIP 10uH
L401	1-408-777-00 s	INDUCTOR, CHIP 10uH
L402	1-408-777-00 s	INDUCTOR, CHIP 10uH

(SE-10(P) BOARD)

Ref. No. or Q'ty	Part No.	SP Description
L403	1-408-783-00 s	INDUCTOR, CHIP 33uH
L404	1-408-777-00 s	INDUCTOR, CHIP 10uH
L501	1-408-777-00 s	INDUCTOR, CHIP 10uH
L601	1-408-777-00 s	INDUCTOR, CHIP 10uH
L602	1-408-777-00 s	INDUCTOR, CHIP 10uH
PS601	A1-532-679-00 s	LINK, IC 0.6A
Q002	8-729-901-01 s	TRANSISTOR DTC144EK
Q003	8-729-901-06 s	TRANSISTOR DTA144EK
Q004	8-729-901-01 s	TRANSISTOR DTC144EK
Q005	8-729-901-01 s	TRANSISTOR DTC144EK
Q006	8-729-901-01 s	TRANSISTOR DTC144EK
Q007	8-729-901-01 s	TRANSISTOR DTC144EK
Q008	8-729-901-01 s	TRANSISTOR DTC144EK
Q009	8-729-901-01 s	TRANSISTOR DTC144EK
Q010	8-729-901-06 s	TRANSISTOR DTA144EK
Q011	8-729-901-06 s	TRANSISTOR DTA144EK
Q014	8-729-901-01 s	TRANSISTOR DTC144EK
Q015	8-729-901-01 s	TRANSISTOR DTC144EK
Q018	8-729-901-01 s	TRANSISTOR DTC144EK
Q101	8-729-901-06 s	TRANSISTOR DTA144EK
Q102	8-729-901-06 s	TRANSISTOR DTA144EK
Q103	8-729-901-06 s	TRANSISTOR DTA144EK
Q104	8-729-901-01 s	TRANSISTOR DTC144EK
Q106	8-729-100-66 s	TRANSISTOR 2SC1623
Q107	8-729-901-06 s	TRANSISTOR DTA144EK
Q108	8-729-901-06 s	TRANSISTOR DTA144EK
Q109	8-729-901-06 s	TRANSISTOR DTA144EK
Q110	8-729-901-06 s	TRANSISTOR DTA144EK
Q111	8-729-100-66 s	TRANSISTOR 2SC1623
Q112	8-729-901-01 s	TRANSISTOR DTC144EK
Q113	8-729-901-01 s	TRANSISTOR DTC144EK
Q114	8-729-901-01 s	TRANSISTOR DTC144EK
Q115	8-729-901-01 s	TRANSISTOR DTC144EK
Q116	8-729-901-06 s	TRANSISTOR DTA144EK
Q201	8-729-100-66 s	TRANSISTOR 2SC1623
Q202	8-729-216-22 s	TRANSISTOR 2SA1162
Q205	8-729-901-01 s	TRANSISTOR DTC144EK
Q206	8-729-901-06 s	TRANSISTOR DTA144EK
Q207	8-729-901-06 s	TRANSISTOR DTA144EK
Q208	8-729-100-66 s	TRANSISTOR 2SC1623
Q209	8-729-901-06 s	TRANSISTOR DTA144EK
Q210	8-729-901-01 s	TRANSISTOR DTC144EK
Q301	8-729-901-06 s	TRANSISTOR DTA144EK
Q302	8-729-901-01 s	TRANSISTOR DTC144EK
Q303	8-729-901-01 s	TRANSISTOR DTC144EK
Q304	8-729-901-01 s	TRANSISTOR DTC144EK
Q305	8-729-901-01 s	TRANSISTOR DTC144EK
Q306	8-729-901-06 s	TRANSISTOR DTA144EK
Q307	8-729-901-01 s	TRANSISTOR DTC144EK
Q308	8-729-901-01 s	TRANSISTOR DTC144EK
Q309	8-729-901-01 s	TRANSISTOR DTC144EK
Q401	8-729-216-22 s	TRANSISTOR 2SA1162
Q402	8-729-100-66 s	TRANSISTOR 2SC1623
Q403	8-729-100-66 s	TRANSISTOR 2SC1623
Q404	8-729-216-22 s	TRANSISTOR 2SA1162
Q405	8-729-100-66 s	TRANSISTOR 2SC1623
Q406	8-729-216-22 s	TRANSISTOR 2SA1162
Q407	8-729-100-66 s	TRANSISTOR 2SC1623

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(SE-10(P) BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q408	8-729-216-22	s TRANSISTOR 2SA1162
Q409	8-729-100-66	s TRANSISTOR 2SC1623
Q410	8-729-100-66	s TRANSISTOR 2SC1623
Q411	8-729-100-66	s TRANSISTOR 2SC1623
Q502	8-729-100-66	s TRANSISTOR 2SC1623
Q503	8-729-901-06	s TRANSISTOR DTA144EK
Q504	8-729-100-66	s TRANSISTOR 2SC1623
Q505	8-729-100-66	s TRANSISTOR 2SC1623
Q506	8-729-100-66	s TRANSISTOR 2SC1623
Q507	8-729-901-06	s TRANSISTOR DTA144EK
Q508	8-729-901-06	s TRANSISTOR DTA144EK
Q601	8-729-901-06	s TRANSISTOR DTA144EK
Q604	8-729-805-25	s TRANSISTOR 2SB1121-S
Q605	8-729-100-66	s TRANSISTOR 2SC1623
Q606	8-729-900-65	s TRANSISTOR DTA144ES
Q701	8-729-901-06	s TRANSISTOR DTA144EK
Q702	8-729-901-06	s TRANSISTOR DTA144EK
Q703	8-729-901-01	s TRANSISTOR DTC144EK
Q704	8-729-216-22	s TRANSISTOR 2SA1162
Q705	8-729-216-22	s TRANSISTOR 2SA1162
Q706	8-729-100-66	s TRANSISTOR 2SC1623
Q707	8-729-100-66	s TRANSISTOR 2SC1623
Q708	8-729-901-06	s TRANSISTOR DTA144EK
Q709	8-729-901-06	s TRANSISTOR DTA144EK
Q710	8-729-901-06	s TRANSISTOR DTA144EK
Q711	8-729-901-06	s TRANSISTOR DTA144EK
Q712	8-729-901-06	s TRANSISTOR DTA144EK
Q713	8-729-901-01	s TRANSISTOR DTC144EK
Q714	8-729-901-01	s TRANSISTOR DTC144EK
R020	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R021	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R022	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R023	1-216-674-11	s METAL, CHIP 9.1K 0.5% 1/10W
R076	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R077	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R078	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R079	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R080	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R081	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R082	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R083	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R084	1-216-080-00	s METAL, CHIP 20K 5% 1/10W
R133	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
R137	1-216-663-11	s METAL, CHIP 3.3K 0.5% 1/10W
R138	1-216-667-11	s METAL, CHIP 4.7K 0.5% 1/10W
R151	1-216-082-00	s METAL, CHIP 24K 5% 1/10W
R234	1-247-895-00	s CARBON 470K 5% 1/4W
R413	1-216-052-00	s METAL, CHIP 1.3K 5% 1/10W
R508	1-216-072-00	s METAL, CHIP 9.1K 5% 1/10W
R553	1-216-748-11	s METAL, CHIP 39K 1% 1/10W
R554	1-216-076-00	s METAL, CHIP 13K 5% 1/10W
R562	1-216-090-00	s METAL, CHIP 51K 5% 1/10W
R703	1-216-691-11	s METAL, CHIP 47K 0.5% 1/10W
R704	1-216-693-11	s METAL, CHIP 56K 0.5% 1/10W
R705	1-216-663-11	s METAL, CHIP 3.3K 0.5% 1/10W
R706	1-216-697-11	s METAL, CHIP 82K 0.5% 1/10W
R708	1-216-685-11	s METAL, CHIP 27K 0.5% 1/10W
R709	1-216-689-11	s METAL, CHIP 39K 0.5% 1/10W
R710	1-216-681-11	s METAL, CHIP 18K 0.5% 1/10W

(SE-10(P) BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R711	1-216-673-11	s METAL, CHIP 8.2K 0.5% 1/10W
R712	1-216-685-11	s METAL, CHIP 27K 0.5% 1/10W
R713	1-216-689-11	s METAL, CHIP 39K 0.5% 1/10W
R714	1-216-663-11	s METAL, CHIP 3.3K 0.5% 1/10W
RV101	1-230-875-21	s RES, ADJ, METAL 220K
RV102	1-230-875-21	s RES, ADJ, METAL 220K
RV103	1-230-871-11	s RES, ADJ, METAL 22K
RV104	1-230-871-11	s RES, ADJ, METAL 22K
RV105	1-230-870-11	s RES, ADJ, METAL 10K
RV106	1-230-870-11	s RES, ADJ, METAL 10K
RV201	1-230-873-11	s RES, ADJ, METAL 47K
RV203	1-230-869-11	s RES, ADJ, METAL 4.7K
RV204	1-230-869-11	s RES, ADJ, METAL 4.7K
RV301	1-230-868-11	s RES, ADJ, METAL 2.2K
RV302	1-230-868-11	s RES, ADJ, METAL 2.2K
RV303	1-230-869-11	s RES, ADJ, METAL 4.7K
RV304	1-230-873-11	s RES, ADJ, METAL 47K
X001	1-577-116-21	s CRYSTAL 16MHz
X002	1-567-346-11	s RESONATOR, CERAMIC 0.5MHz
X003	1-567-346-11	s RESONATOR, CERAMIC 0.5MHz
X004	1-567-160-21	s RESONATOR, CERAMIC 4.19MHz
X101	1-567-504-31	s CRYSTAL 4.433619MHz

SW-346 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-631-793-11	o PRINTED CIRCUIT BOARD, SW-346
CN224	1-506-471-11	s CONNECTOR, 6P, MALE
R1	1-249-433-11	s CARBON 22K 5% 1/4W
R2	1-249-433-11	s CARBON 22K 5% 1/4W
RV1	1-238-483-11	s RES, VAR CARBON 5K
RV2	1-238-483-11	s RES, VAR CARBON 5K
S1002	1-516-963-00	s SWITCH, LEVER SLIDE

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

SW-347A BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-631-794-11	o PRINTED CIRCUIT BOARD, SW-347
C1	1-124-589-11	s ELECT 47uF 20% 16V
R3	1-249-411-11	s CARBON 330 5% 1/4W
RV2	1-230-122-00	s RES, VAR CARBON 100K
S1	1-554-481-00	s SWITCH, SLIDE
S2	1-554-481-00	s SWITCH, SLIDE
S3	1-571-908-11	s SWITCH, SLIDE
S4	1-571-908-11	s SWITCH, SLIDE
S5	1-554-481-00	s SWITCH, SLIDE

SW-348 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-631-795-11	o PRINTED CIRCUIT BOARD, SW-348
S1007	1-516-961-00	s SWITCH, LEVER SLIDE

SY-145A BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7062-151-A	o MOUNTED CIRCUIT BOARD, SY-145A
1pc	3-646-090-00	s RIVET, NYLON
1pc	3-657-153-00	o HINGE
1pc	7-682-903-01	s SCREW +PWH 3X5
C1	1-130-487-00	s MYLAR 0.022uF 5% 50V
C2	1-162-207-31	s CERAMIC 22PF 5% 50V
C3	1-130-487-00	s MYLAR 0.022uF 5% 50V
C4	1-162-207-31	s CERAMIC 22PF 5% 50V
C5	1-162-210-31	s CERAMIC 30PF 5% 50V
C6	1-162-210-31	s CERAMIC 30PF 5% 50V
C8	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C9	1-161-051-00	s CERAMIC 0.01uF 10% 50V
C10	1-126-233-11	s ELECT 22uF 20% 50V
C12	1-131-349-00	s TANTALUM 2.2uF 10% 35V
C14	1-124-927-11	s ELECT 4.7uF 20% 100V
C15	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C16	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C17	1-107-085-00	s MICA 100PF 5% 50V
C18	1-107-085-00	s MICA 100PF 5% 50V
C19	1-162-282-31	s CERAMIC 100PF 10% 50V
C20	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C21	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C23	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C25	1-161-055-00	s CERAMIC 0.022uF 10% 50V
C26	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C27	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C29	1-107-085-00	s MICA 100PF 5% 50V
C30	1-107-085-00	s MICA 100PF 5% 50V
C31	1-162-282-31	s CERAMIC 100PF 10% 50V
C100	1-162-282-31	s CERAMIC 100PF 10% 50V
C101	1-130-471-00	s MYLAR 0.001uF 5% 50V
C102	1-130-473-00	s MYLAR 0.0015uF 5% 50V
C103	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C104	1-107-159-00	s MICA 33PF 5% 500V
C105	1-130-471-00	s MYLAR 0.001uF 5% 50V
C106	1-130-477-00	s MYLAR 0.0033uF 5% 50V
C108	1-130-475-00	s MYLAR 0.0022uF 5% 50V
C109	1-162-294-31	s CERAMIC 0.001uF 10% 50V
C110	1-162-288-31	s CERAMIC 330PF 10% 50V
C112	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C115	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C116	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C117	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C118	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C204	1-124-234-00	s ELECT 22uF 20% 16V
C206	1-130-471-00	s MYLAR 0.001uF 5% 50V
C207	1-130-477-00	s MYLAR 0.0033uF 5% 50V
C208	1-162-294-31	s CERAMIC 0.001uF 10% 50V
C209	1-130-475-00	s MYLAR 0.0022uF 5% 50V
C210	1-162-288-31	s CERAMIC 330PF 10% 50V
C212	1-126-157-11	s ELECT 10uF 20% 16V
C213	1-162-210-31	s CERAMIC 30PF 5% 50V
C214	1-162-210-31	s CERAMIC 30PF 5% 50V
C215	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C217	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C218	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C219	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C220	1-130-491-00	s MYLAR 0.047uF 5% 50V
C221	1-161-379-00	s CERAMIC 0.01uF 20% 25V

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(SY-145A BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C222	1-130-475-00	s MYLAR 0.0022uF 5% 50V
C223	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C307	1-162-210-31	s CERAMIC 30PF 5% 50V
C308	1-162-210-31	s CERAMIC 30PF 5% 50V
C309	1-130-471-00	s MYLAR 0.001uF 5% 50V
C310	1-130-471-00	s MYLAR 0.001uF 5% 50V
C312	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C313	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C314	1-162-290-31	s CERAMIC 470PF 10% 50V
C316	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C317	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C318	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C319	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C320	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C321	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C322	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C323	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C324	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C325	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C326	1-130-490-11	s MYLAR 0.039uF 5% 50V
C327	1-162-282-31	s CERAMIC 100PF 10% 50V
C328	1-102-112-00	s CERAMIC 330PF 10% 50V
C329	1-130-491-00	s MYLAR 0.047uF 5% 50V
C400	1-102-110-00	s CERAMIC 220PF 10% 50V
CN509	1-506-471-11	s CONNECTOR, 6P, MALE
CNI2	1-526-659-00	o SOCKET, IC 28P
CV100	1-141-389-11	s CAP, TRIMMER 50PF
D1	8-719-911-19	s DIODE 1SS119
D2	8-719-911-19	s DIODE 1SS119
D3	8-719-911-19	s DIODE 1SS119
D5	8-719-911-19	s DIODE 1SS119
D6	8-719-911-19	s DIODE 1SS119
D201	8-719-911-19	s DIODE 1SS119
D202	8-719-911-19	s DIODE 1SS119
D203	8-719-911-19	s DIODE 1SS119
D301	8-719-911-19	s DIODE 1SS119
D302	8-719-911-19	s DIODE 1SS119
D304	8-719-911-19	s DIODE 1SS119
IC1	8-759-208-86	s IC TMPZ84C011AF-6
IC2	8-759-746-99	s IC MBM27C512-25
IC3	8-752-331-06	s IC CXK5864PN-12L
IC4	8-752-323-26	s IC CXK1009P
IC5	8-759-916-84	s IC LH0084A
IC6	8-759-938-68	s IC CXD1095Q
IC7	8-759-916-94	s IC SN74HC373N
IC8	8-759-045-38	s IC MC14538BCP
IC9	8-759-916-14	s IC SN74HC04N
IC10	8-759-917-46	s IC 74F11PC
IC11	8-759-240-69	s IC TC4069UBP
IC12	8-759-008-57	s IC MC34051P
IC13	8-759-916-25	s IC SN74HC32N
IC14	8-759-916-46	s IC SN74HC139N
IC15	8-759-916-14	s IC SN74HC04N
IC16	8-759-146-83	s IC UPD7564CS-110
IC17	8-759-904-83	s IC 74F32PC
IC18	8-759-916-20	s IC SN74HC14N

(SY-145A BOARD)

Ref. No. or Q'ty	Part No.	SP Description
IC19	8-759-803-70	s IC SN74HC08N
IC100	8-759-908-23	s IC MB88303
IC101	8-759-045-38	s IC MC14538BCP
IC102	8-759-045-38	s IC MC14538BCP
IC103	8-759-981-64	s IC LM2903DQ
IC104	8-759-000-27	s IC MC14017BCP
IC105	8-759-916-29	s IC SN74HC74N
IC106	8-759-045-38	s IC MC14538BCP
IC107	8-759-340-13	s IC HD14013BP
IC200	8-743-915-10	s IC BX3915A
IC201	8-759-981-64	s IC LM2903DQ
IC202	8-759-000-27	s IC MC14017BCP
IC203	8-759-045-38	s IC MC14538BCP
IC204	8-759-984-95	s IC MB88201H-652M
IC300	8-759-505-44	s IC MB88505H-1226M
IC301	8-759-916-21	s IC SN74HC20N
IC302	8-759-203-05	s IC TC74HC193P
IC303	8-759-203-05	s IC TC74HC193P
IC304	8-759-916-25	s IC SN74HC32N
IC305	8-759-916-29	s IC SN74HC74N
IC306	8-759-240-71	s IC TC4071BP
IC307	8-759-916-20	s IC SN74HC14N
IC308	8-759-803-70	s IC SN74HC08N
IC309	8-759-916-21	s IC SN74HC20N
IC310	8-759-916-20	s IC SN74HC14N
PS1	A1-532-679-00	s LINK, IC 0.6A
Q1	8-729-900-89	s TRANSISTOR DTC144ES
Q2	8-729-900-65	s TRANSISTOR DTA144ES
Q3	8-729-900-89	s TRANSISTOR DTC144ES
Q4	8-729-900-89	s TRANSISTOR DTC144ES
Q6	8-729-900-89	s TRANSISTOR DTC144ES
Q7	8-729-900-89	s TRANSISTOR DTC144ES
Q8	8-729-900-89	s TRANSISTOR DTC144ES
Q9	8-729-900-89	s TRANSISTOR DTC144ES
Q10	8-729-900-89	s TRANSISTOR DTC144ES
Q11	8-729-900-89	s TRANSISTOR DTC144ES
Q12	8-729-900-89	s TRANSISTOR DTC144ES
Q13	8-729-178-55	s TRANSISTOR 2SC2785-E
Q14	8-729-900-65	s TRANSISTOR DTA144ES
Q15	8-729-900-89	s TRANSISTOR DTC144ES
Q201	8-729-900-89	s TRANSISTOR DTC144ES
Q202	8-729-900-89	s TRANSISTOR DTC144ES
Q203	8-729-900-89	s TRANSISTOR DTC144ES
Q204	8-729-900-89	s TRANSISTOR DTC144ES
Q205	8-729-900-89	s TRANSISTOR DTC144ES
Q206	8-729-900-89	s TRANSISTOR DTC144ES
Q207	8-729-900-89	s TRANSISTOR DTC144ES
Q301	8-729-900-89	s TRANSISTOR DTC144ES
Q302	8-729-900-89	s TRANSISTOR DTC144ES
Q303	8-729-900-89	s TRANSISTOR DTC144ES
R1	1-249-433-11	s CARBON 22K 5% 1/4W
R2	1-249-441-11	s CARBON 100K 5% 1/4W
R3	1-249-433-11	s CARBON 22K 5% 1/4W
R4	1-249-421-11	s CARBON 2.2K 5% 1/4W
R5	1-249-429-11	s CARBON 10K 5% 1/4W
R6	1-249-405-11	s CARBON 100 5% 1/4W
R7	1-249-437-11	s CARBON 47K 5% 1/4W
R8	1-249-437-11	s CARBON 47K 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(SY-145A BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R9	1-249-429-11	s CARBON 10K 5% 1/4W
R10	1-249-433-11	s CARBON 22K 5% 1/4W
R11	1-249-433-11	s CARBON 22K 5% 1/4W
R12	1-249-429-11	s CARBON 10K 5% 1/4W
R13	1-249-429-11	s CARBON 10K 5% 1/4W
R14	1-249-426-11	s CARBON 5.6K 5% 1/4W
R15	1-249-433-11	s CARBON 22K 5% 1/4W
R16	1-249-433-11	s CARBON 22K 5% 1/4W
R17	1-249-426-11	s CARBON 5.6K 5% 1/4W
R18	1-249-436-11	s CARBON 39K 5% 1/4W
R19	1-249-436-11	s CARBON 39K 5% 1/4W
R20	1-249-437-11	s CARBON 47K 5% 1/4W
R21	1-249-429-11	s CARBON 10K 5% 1/4W
R22	1-249-429-11	s CARBON 10K 5% 1/4W
R24	1-249-405-11	s CARBON 100 5% 1/4W
R25	1-249-411-11	s CARBON 330 5% 1/4W
R26	1-249-437-11	s CARBON 47K 5% 1/4W
R27	1-249-437-11	s CARBON 47K 5% 1/4W
R28	1-249-437-11	s CARBON 47K 5% 1/4W
R29	1-249-425-11	s CARBON 4.7K 5% 1/4W
R30	1-249-429-11	s CARBON 10K 5% 1/4W
R31	1-249-429-11	s CARBON 10K 5% 1/4W
R32	1-249-423-11	s CARBON 3.3K 5% 1/4W
R33	1-249-437-11	s CARBON 47K 5% 1/4W
R34	1-249-435-11	s CARBON 33K 5% 1/4W
R35	1-249-437-11	s CARBON 47K 5% 1/4W
R36	1-249-429-11	s CARBON 10K 5% 1/4W
R37	1-249-405-11	s CARBON 100 5% 1/4W
R38	1-249-436-11	s CARBON 39K 5% 1/4W
R39	1-249-405-11	s CARBON 100 5% 1/4W
R40	1-249-441-11	s CARBON 100K 5% 1/4W
R41	1-247-903-00	s CARBON 1M 5% 1/4W
R42	1-249-425-11	s CARBON 4.7K 5% 1/4W
R43	1-249-433-11	s CARBON 22K 5% 1/4W
R44	1-247-903-00	s CARBON 1M 5% 1/4W
R45	1-249-429-11	s CARBON 10K 5% 1/4W
R46	1-249-429-11	s CARBON 10K 5% 1/4W
R47	1-249-437-11	s CARBON 47K 5% 1/4W
R48	1-249-429-11	s CARBON 10K 5% 1/4W
R49	1-249-422-11	s CARBON 2.7K 5% 1/4W
R50	1-249-410-11	s CARBON 270 5% 1/4W
R51	1-249-429-11	s CARBON 10K 5% 1/4W
R52	1-249-419-11	s CARBON 1.5K 5% 1/4W
R53	1-249-405-11	s CARBON 100 5% 1/4W
R54	1-249-419-11	s CARBON 1.5K 5% 1/4W
R56	1-249-417-11	s CARBON 1K 5% 1/4W
R57	1-249-417-11	s CARBON 1K 5% 1/4W
R58	1-249-429-11	s CARBON 10K 5% 1/4W
R59	1-249-429-11	s CARBON 10K 5% 1/4W
R60	1-249-417-11	s CARBON 1K 5% 1/4W
R61	1-249-417-11	s CARBON 1K 5% 1/4W
R62	1-249-417-11	s CARBON 1K 5% 1/4W
R63	1-249-417-11	s CARBON 1K 5% 1/4W
R64	1-249-417-11	s CARBON 1K 5% 1/4W
R65	1-249-417-11	s CARBON 1K 5% 1/4W
R66	1-249-417-11	s CARBON 1K 5% 1/4W
R67	1-249-417-11	s CARBON 1K 5% 1/4W
R69	1-249-405-11	s CARBON 100 5% 1/4W
R70	1-249-405-11	s CARBON 100 5% 1/4W

(SY-145A BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R71	1-249-427-11	s CARBON 6.8K 5% 1/4W
R72	1-249-437-11	s CARBON 47K 5% 1/4W
R73	1-249-405-11	s CARBON 100 5% 1/4W
R74	1-249-417-11	s CARBON 1K 5% 1/4W
R75	1-249-417-11	s CARBON 1K 5% 1/4W
R76	1-249-417-11	s CARBON 1K 5% 1/4W
R77	1-249-417-11	s CARBON 1K 5% 1/4W
R78	1-249-417-11	s CARBON 1K 5% 1/4W
R79	1-249-417-11	s CARBON 1K 5% 1/4W
R80	1-249-405-11	s CARBON 100 5% 1/4W
R81	1-247-881-00	s CARBON 120K 5% 1/4W
R82	1-247-881-00	s CARBON 120K 5% 1/4W
R83	1-249-437-11	s CARBON 47K 5% 1/4W
R84	1-249-425-11	s CARBON 4.7K 5% 1/4W
R100	1-249-429-11	s CARBON 10K 5% 1/4W
R101	1-249-437-11	s CARBON 47K 5% 1/4W
R102	1-249-417-11	s CARBON 1K 5% 1/4W
R104	1-249-429-11	s CARBON 10K 5% 1/4W
R106	1-249-417-11	s CARBON 1K 5% 1/4W
R107	1-249-417-11	s CARBON 1K 5% 1/4W
R108	1-249-405-11	s CARBON 100 5% 1/4W
R109	1-215-460-00	s METAL 43K 1% 1/6W
R111	1-249-434-11	s CARBON 27K 5% 1/4W
R112	1-249-437-11	s CARBON 47K 5% 1/4W
R113	1-249-426-11	s CARBON 5.6K 5% 1/4W
R114	1-249-429-11	s CARBON 10K 5% 1/4W
R115	1-249-441-11	s CARBON 100K 5% 1/4W
R116	1-249-429-11	s CARBON 10K 5% 1/4W
R118	1-249-441-11	s CARBON 100K 5% 1/4W
R119	1-249-425-11	s CARBON 4.7K 5% 1/4W
R120	1-249-425-11	s CARBON 4.7K 5% 1/4W
R150	1-249-417-11	s CARBON 1K 5% 1/4W
R200	1-249-437-11	s CARBON 47K 5% 1/4W
R202	1-249-435-11	s CARBON 33K 5% 1/4W
R207	1-249-421-11	s CARBON 2.2K 5% 1/4W
R208	1-249-421-11	s CARBON 2.2K 5% 1/4W
R209	1-249-409-11	s CARBON 220 5% 1/4W
R210	1-249-427-11	s CARBON 6.8K 5% 1/4W
R211	1-249-425-11	s CARBON 4.7K 5% 1/4W
R212	1-215-460-00	s METAL 43K 1% 1/6W
R213	1-249-434-11	s CARBON 27K 5% 1/4W
R214	1-249-437-11	s CARBON 47K 5% 1/4W
R215	1-249-426-11	s CARBON 5.6K 5% 1/4W
R217	1-249-429-11	s CARBON 10K 5% 1/4W
R218	1-249-441-11	s CARBON 100K 5% 1/4W
R219	1-249-441-11	s CARBON 100K 5% 1/4W
R221	1-249-429-11	s CARBON 10K 5% 1/4W
R222	1-249-429-11	s CARBON 10K 5% 1/4W
R223	1-249-417-11	s CARBON 1K 5% 1/4W
R224	1-249-405-11	s CARBON 100 5% 1/4W
R225	1-249-405-11	s CARBON 100 5% 1/4W
R227	1-249-405-11	s CARBON 100 5% 1/4W
R228	1-249-437-11	s CARBON 47K 5% 1/4W
R229	1-215-482-00	s METAL 360K 1% 1/6W
R230	1-249-441-11	s CARBON 100K 5% 1/4W
R231	1-249-437-11	s CARBON 47K 5% 1/4W
R301	1-249-441-11	s CARBON 100K 5% 1/4W
R302	1-249-441-11	s CARBON 100K 5% 1/4W
R303	1-249-429-11	s CARBON 10K 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(SY-145A BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R321	1-249-429-11	s CARBON 10K 5% 1/4W
R322	1-249-433-11	s CARBON 22K 5% 1/4W
R323	1-249-433-11	s CARBON 22K 5% 1/4W
R327	1-249-417-11	s CARBON 1K 5% 1/4W
R336	1-249-429-11	s CARBON 10K 5% 1/4W
R337	1-249-429-11	s CARBON 10K 5% 1/4W
R338	1-249-441-11	s CARBON 100K 5% 1/4W
R339	1-249-433-11	s CARBON 22K 5% 1/4W
R343	1-249-405-11	s CARBON 100 5% 1/4W
R347	1-249-405-11	s CARBON 100 5% 1/4W
R348	1-249-405-11	s CARBON 100 5% 1/4W
R349	1-249-417-11	s CARBON 1K 5% 1/4W
R350	1-249-405-11	s CARBON 100 5% 1/4W
R351	1-249-429-11	s CARBON 10K 5% 1/4W
R352	1-247-881-00	s CARBON 120K 5% 1/4W
R355	1-249-417-11	s CARBON 1K 5% 1/4W
R356	1-249-417-11	s CARBON 1K 5% 1/4W
R357	1-249-405-11	s CARBON 100 5% 1/4W
R358	1-249-405-11	s CARBON 100 5% 1/4W
R359	1-249-417-11	s CARBON 1K 5% 1/4W
R360	1-249-405-11	s CARBON 100 5% 1/4W
R361	1-249-405-11	s CARBON 100 5% 1/4W
R363	1-249-425-11	s CARBON 4.7K 5% 1/4W
R364	1-249-437-11	s CARBON 47K 5% 1/4W
R365	1-249-405-11	s CARBON 100 5% 1/4W
R366	1-215-445-00	s METAL 10K 1% 1/6W
R367	1-215-469-00	s METAL 100K 1% 1/6W
RB3	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB6	1-235-109-00	s RESISTOR BLOCK 22Kx8
RB10	1-231-410-00	s RESISTOR BLOCK 10Kx8
RV1	1-230-499-11	s RES, ADJ METAL 100K
RV2	1-237-505-21	s RES, ADJ, METAL 50K
X1	1-567-870-11	s RESONATOR, CERAMIC 614KHz
X2	1-567-132-00	s RESONATOR, CERAMIC 8.00MHz
X3	1-567-870-11	s RESONATOR, CERAMIC 614KHz
X4	1-567-132-00	s RESONATOR, CERAMIC 8.00MHz
X5	1-567-132-00	s RESONATOR, CERAMIC 8.00MHz

TS-74(LEFT) BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7070-628-A	o MOUNTED CIRCUIT BOARD, TS-74 (LEFT)
Q715	8-729-700-11	s NJL7141E-N

TS-74(RIGHT) BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7070-627-A	o MOUNTED CIRCUIT BOARD, TS-74 (LEFT)
Q715	8-729-700-11	s NJL7141E-N

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

UR-14E BOARD

Ref. No. or Q'ty	Part No.	SP Description
1	△1-413-249-12	s SWITCHING REGULATOR, UR-14E
C101	△1-161-742-00	s CERAMIC 2200PF 20% 400V
C102	△1-161-742-00	s CERAMIC 2200PF 20% 400V
C103	△1-161-742-00	s CERAMIC 2200PF 20% 400V
C104	△1-161-742-00	s CERAMIC 2200PF 20% 400V
C105	△1-136-185-00	s FILM 0.22uF 20% 250V
C106	△1-136-185-00	s FILM 0.22uF 20% 250V
C107	△1-161-742-00	s CERAMIC 2200PF 20% 400V
C108	△1-161-742-00	s CERAMIC 2200PF 20% 400V
C109	1-124-961-00	s ELECT 220 20% 200V
C110	1-124-023-00	s ELECT 4.7 20% 350V
C111	1-124-023-00	s ELECT 4.7 20% 350V
C112	1-124-549-00	s ELECT 100 20% 10V
C113	1-124-961-00	s ELECT 220 20% 200V
C114	1-124-549-00	s ELECT 100 20% 10V
C201	1-106-351-00	s MYLAR 0.0022 5% 200V
C202	1-106-351-00	s MYLAR 0.0022 5% 200V
C203	1-161-825-11	s CERAMIC 220PF 10% 500V
C204	1-161-825-11	s CERAMIC 220PF 10% 500V
C205	1-161-825-11	s CERAMIC 220PF 10% 500V
C206	1-161-825-11	s CERAMIC 220PF 10% 500V
C207	1-123-357-00	s ELECT 22 20% 50V
C209	1-106-351-00	s MYLAR 0.0022 5% 200V
C210	1-136-153-00	s MYLAR 0.01 5% 50V
C211	1-106-351-00	s MYLAR 0.0022 5% 200V
C212	1-124-556-00	s ELECT 2200 20% 16V
C213	1-124-556-00	s ELECT 2200 20% 16V
C214	1-124-556-00	s ELECT 2200 20% 16V
C215	1-124-556-00	s ELECT 2200 20% 16V
C216	1-123-326-00	s ELECT 3300 20% 16V
C217	1-123-332-00	s ELECT 47 20% 50V
C651	1-124-445-00	s ELECT 100 20% 16V
C652	1-130-591-11	s MYLAR 3300PF 2% 100V
C653	1-136-141-00	s MYLAR 1000PF 10% 50V
C654	1-136-165-00	s MYLAR 0.1 5% 50V
C655	1-123-318-00	s ELECT 33 16V
CN101	△1-560-436-00	o RECEPTACLE, 3P
	△1-561-218-11	o HOUSING, 3P
	△1-561-254-11	o CONTACT
CN201	1-560-438-00	o RECEPTACLE, 5P
	1-561-424-11	o HOUSING, 5P
	1-561-432-11	o CONTACT
D101	8-719-300-00	s LB-156
D201	8-719-908-00	s ESAC33-02CS
D202	8-719-908-00	s ESAC33-02CS
D203	8-719-900-93	s V09C
D204	8-719-900-93	s V09C
D205	8-719-815-55	s IS1555
D206	8-719-100-61	s RD11EB2
D208	8-719-101-67	s RD7.5EL2
D209	8-719-100-30	s RD5.1EB2
D210	8-719-100-30	s RD5.1EB2
D651	8-719-200-02	s 10E-2
D652	8-719-100-70	s RD15EB1
D653	8-719-815-55	s IS1555
FB101	1-543-060-00	s CORE

(UR-14E BOARD)

Ref. No. or Q'ty	Part No.	SP Description
FB102	1-543-060-00	s CORE
FB201	1-543-060-00	s CORE
FB202	1-543-060-00	s CORE
FB203	1-543-060-00	s CORE
FB204	1-543-060-00	s CORE
FB205	1-543-060-00	s CORE
FB206	1-543-060-00	s CORE
FB207	1-543-060-00	s CORE
FB208	1-543-060-00	s CORE
IC651	8-759-937-00	s MB3759
L101	△1-421-848-11	s LINE FILTER
L201	1-421-849-11	s CHOKE, 2.4 mH
L203	1-408-316-00	s CHOKE
L204	1-421-850-11	s CHOKE, 12
L205	1-421-329-00	s CHOKE
Q101	8-729-901-72	s 2SC3317
Q102	8-729-901-72	s 2SC3317
Q103	8-729-100-13	s 2SC2001
Q104	8-729-100-13	s 2SC2001
Q201	8-729-606-34	s 2SC2603-G
Q202	8-729-117-54	s 2SA1175-F
R101	1-214-947-00	s METAL 2.7M 1% 1/2W
R102	△1-205-636-11	s CEMENT 3.3 5% 5W
R103	1-246-529-00	s CARBON 220k 5% 1/4W
R104	1-246-529-00	s CARBON 220k 5% 1/4W
R105	△1-212-934-00	s METAL 1 5% 1/2W
R106	1-247-700-11	s NF CARBON 100 5% 1/4W
R107	1-246-529-00	s CARBON 220k 5% 1/4W
R108	1-246-529-00	s CARBON 220k 5% 1/4W
R109	△1-212-934-00	s METAL 1 5% 1/2W
R110	1-247-700-11	s NF CARBON 100 5% 1/4W
R201	△1-206-475-00	s METAL 33 5% 2W
R202	1-535-369-00	s SHUNT 0.02 2W
R203	△1-213-151-00	s METAL 4.7k 5% 5W
R204	1-247-713-11	s NF CARBON 1k 5% 1/4W
R205	1-247-719-11	s NF CARBON 3.3k 5% 1/4W
R206	1-249-455-11	s NF CARBON 4.7k 5% 1/4W
R207	1-247-717-11	s NF CARBON 2.2k 5% 1/4W
R208	1-247-123-00	s NF CARBON 470 5% 1/4W
R209	1-247-704-11	s NF CARBON 220 5% 1/4W
R212	1-247-857-00	s NF CARBON 220 5% 1/2W
R651	1-249-425-11	s NF CARBON 4.7k 5% 1/6W
RV651	1-228-644-00	s VAR, METAL 1k 0.3W
T101	△1-448-423-11	s CONVERTER
T102	△1-437-120-00	s DRIVE

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

VO-30 BOARD

Ref. No.

or Q'ty Part No. SP Description

1pc A-7062-152-A o MOUNTED CIRCUIT BOARD, VO-30
 1pc 3-646-090-00 s RIVET, NYLON
 1pc 3-657-153-00 o HINGE
 1pc 3-738-963-01 o CASE, SHIELD, VO
 1pc 7-682-903-01 s SCREW +PWH 3X5

C3 1-161-494-00 s CERAMIC 0.022uF 25V
 C6 1-161-021-11 s CERAMIC 0.047uF 10% 25V
 C7 1-130-499-00 s MYLAR 0.22uF 5% 50V
 C11 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C12 1-161-379-00 s CERAMIC 0.01uF 20% 25V

C13 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C14 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C15 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C16 1-126-157-11 s ELECT 10uF 20% 16V
 C17 1-161-494-00 s CERAMIC 0.022uF 25V

C19 1-161-494-00 s CERAMIC 0.022uF 25V
 C20 1-124-360-00 s ELECT 1000uF 20% 16V
 C22 1-107-202-00 s MICA 10PF 5% 500V
 C23 1-107-045-00 s MICA 3.9PF 500V
 C24 1-126-176-11 s ELECT 220uF 20% 10V

C25 1-130-471-00 s MYLAR 0.001uF 5% 50V
 C26 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C38 1-107-085-00 s MICA 100PF 5% 50V
 C39 1-161-021-11 s CERAMIC 0.047uF 10% 25V
 C40 1-161-051-00 s CERAMIC 0.01uF 10% 50V

C51 1-107-157-00 s MICA 27PF 5% 500V
 C54 1-126-157-11 s ELECT 10uF 20% 16V
 C55 1-126-157-11 s ELECT 10uF 20% 16V
 C56 1-161-021-11 s CERAMIC 0.047uF 10% 25V
 C57 1-126-157-11 s ELECT 10uF 20% 16V

C58 1-107-159-00 s MICA 33PF 5% 500V
 C59 1-126-157-11 s ELECT 10uF 20% 16V
 C60 1-126-157-11 s ELECT 10uF 20% 16V
 C61 1-126-157-11 s ELECT 10uF 20% 16V
 C62 1-161-021-11 s CERAMIC 0.047uF 10% 25V

C63 1-162-875-11 s CERAMIC 68PF 5% 50V
 C65 1-161-021-11 s CERAMIC 0.047uF 10% 25V
 C102 1-107-085-00 s MICA 100PF 5% 50V
 C103 1-131-341-00 s TANTALUM 0.1uF 10% 35V
 C104 1-162-726-11 s CERAMIC 470PF 1% 50V

C105 1-130-491-00 s MYLAR 0.047uF 5% 50V
 C108 1-107-085-00 s MICA 100PF 5% 50V
 C109 1-130-499-00 s MYLAR 0.22uF 5% 50V
 C111 1-107-159-00 s MICA 33PF 5% 500V
 C113 1-107-085-00 s MICA 100PF 5% 50V

C118 1-130-487-00 s MYLAR 0.022uF 5% 50V
 C200 1-161-494-00 s CERAMIC 0.022uF 25V
 C202 1-126-157-11 s ELECT 10uF 20% 16V
 C205 1-126-157-11 s ELECT 10uF 20% 16V
 C206 1-126-157-11 s ELECT 10uF 20% 16V

C210 1-124-360-00 s ELECT 1000uF 20% 16V
 C212 1-130-487-00 s MYLAR 0.022uF 5% 50V
 C301 1-162-726-11 s CERAMIC 470PF 1% 50V
 C309 1-161-051-00 s CERAMIC 0.01uF 10% 50V
 C325 1-107-209-00 s MICA 20PF 5% 500V

C328 1-107-210-00 s MICA 22PF 5% 500V
 C329 1-107-207-00 s MICA 16PF 5% 500V
 C405 1-161-494-00 s CERAMIC 0.022uF 25V
 C406 1-161-494-00 s CERAMIC 0.022uF 25V

(VO-30 BOARD)

Ref. No.

or Q'ty Part No. SP Description

C408 1-124-438-00 s ELECT 1uF 20% 50V
 C409 1-109-631-00 s MICA 330PF 2% 500V
 C410 1-130-483-00 s MYLAR 0.01uF 5% 50V
 C411 1-126-157-11 s ELECT 10uF 20% 16V
 C412 1-161-494-00 s CERAMIC 0.022uF 25V

C414 1-161-494-00 s CERAMIC 0.022uF 25V
 C415 1-126-157-11 s ELECT 10uF 20% 16V
 C417 1-126-176-11 s ELECT 220uF 20% 10V
 C419 1-161-494-00 s CERAMIC 0.022uF 25V
 C420 1-107-158-00 s MICA 30PF 5% 500V

C422 1-126-157-11 s ELECT 10uF 20% 16V
 C423 1-126-157-11 s ELECT 10uF 20% 16V
 C424 1-126-157-11 s ELECT 10uF 20% 16V
 C425 1-126-157-11 s ELECT 10uF 20% 16V
 C426 1-161-379-00 s CERAMIC 0.01uF 20% 25V

C427 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C428 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C429 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C430 1-161-494-00 s CERAMIC 0.022uF 25V
 C431 1-161-494-00 s CERAMIC 0.022uF 25V

C433 1-130-479-00 s MYLAR 0.0047uF 5% 50V
 C434 1-130-471-00 s MYLAR 0.001uF 5% 50V
 C501 1-107-075-00 s MICA 39PF 5% 50V
 C502 1-107-085-00 s MICA 100PF 5% 50V
 C503 1-109-541-00 s MICA 200PF 5% 100V

C504 1-109-627-00 s MICA 150PF 2% 500V
 C505 1-130-471-00 s MYLAR 0.001uF 5% 50V
 C506 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C507 1-161-494-00 s CERAMIC 0.022uF 25V
 C509 1-126-157-11 s ELECT 10uF 20% 16V

C510 1-161-494-00 s CERAMIC 0.022uF 25V
 C511 1-161-494-00 s CERAMIC 0.022uF 25V
 C513 1-161-494-00 s CERAMIC 0.022uF 25V
 C514 1-161-494-00 s CERAMIC 0.022uF 25V
 C515 1-161-494-00 s CERAMIC 0.022uF 25V

C516 1-130-471-00 s MYLAR 0.001uF 5% 50V
 C517 1-126-157-11 s ELECT 10uF 20% 16V
 C518 1-126-157-11 s ELECT 10uF 20% 16V
 C519 1-126-157-11 s ELECT 10uF 20% 16V
 C520 1-161-494-00 s CERAMIC 0.022uF 25V

C522 1-124-438-00 s ELECT 1uF 20% 50V
 C523 1-107-208-00 s MICA 18PF 5% 500V
 C525 1-161-494-00 s CERAMIC 0.022uF 25V
 C526 1-126-157-11 s ELECT 10uF 20% 16V
 C527 1-130-487-00 s MYLAR 0.022uF 5% 50V

C528 1-161-379-00 s CERAMIC 0.01uF 20% 25V
 C529 1-161-494-00 s CERAMIC 0.022uF 25V
 C530 1-161-494-00 s CERAMIC 0.022uF 25V
 C600 1-161-494-00 s CERAMIC 0.022uF 25V
 C602 1-124-438-00 s ELECT 1uF 20% 50V

C603 1-161-494-00 s CERAMIC 0.022uF 25V
 C604 1-161-021-11 s CERAMIC 0.047uF 10% 25V
 C606 1-161-494-00 s CERAMIC 0.022uF 25V
 C607 1-161-051-00 s CERAMIC 0.01uF 10% 50V
 C608 1-161-051-00 s CERAMIC 0.01uF 10% 50V

C650 1-107-159-00 s MICA 33PF 5% 500V
 C651 1-109-542-00 s MICA 220PF 5% 100V
 C652 1-109-541-00 s MICA 200PF 5% 100V
 C653 1-109-541-00 s MICA 200PF 5% 100V

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(VO-30 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C654	1-130-479-00	s MYLAR 0.0047uF 5% 50V
C655	1-107-084-00	s MICA 91PF 5% 50V
C656	1-130-483-00	s MYLAR 0.01uF 5% 50V
C658	1-161-494-00	s CERAMIC 0.022uF 25V
C659	1-126-157-11	s ELECT 10uF 20% 16V
C661	1-107-076-00	s MICA 43PF 5% 50V
C663	1-107-210-00	s MICA 22PF 5% 500V
C664	1-107-048-00	s MICA 6.8PF 500V
C665	1-126-157-11	s ELECT 10uF 20% 16V
C666	1-107-202-00	s MICA 10PF 5% 500V
C668	1-161-021-11	s CERAMIC 0.047uF 10% 25V
C669	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C670	1-107-165-00	s MICA 56PF 5% 50V
C671	1-107-085-00	s MICA 100PF 5% 50V
C672	1-107-202-00	s MICA 10PF 5% 500V
C673	1-124-438-00	s ELECT 1uF 20% 50V
C674	1-124-438-00	s ELECT 1uF 20% 50V
C675	1-161-021-11	s CERAMIC 0.047uF 10% 25V
C677	1-126-157-11	s ELECT 10uF 20% 16V
C681	1-126-157-11	s ELECT 10uF 20% 16V
C682	1-107-210-00	s MICA 22PF 5% 500V
CN303	1-506-471-11	s CONNECTOR, 6P, MALE
CN310	1-506-471-11	s CONNECTOR, 6P, MALE
CV500	1-141-246-00	s CAP, TRIMMER 20PF
CV650	1-141-246-00	s CAP, TRIMMER 20PF
D1	8-719-101-97	s DIODE 1SS97-1
D2	8-719-101-97	s DIODE 1SS97-1
D3	8-719-101-97	s DIODE 1SS97-1
D4	8-719-101-97	s DIODE 1SS97-1
D100	8-719-110-13	s DIODE RD9.1ES-B2
D101	8-719-911-19	s DIODE 1SS119
D200	8-719-104-10	s DIODE 1SS99
D201	8-719-104-10	s DIODE 1SS99
D301	8-719-911-19	s DIODE 1SS119
D400	8-719-911-19	s DIODE 1SS119
D401	8-719-911-19	s DIODE 1SS119
D402	8-719-104-10	s DIODE 1SS99
D403	8-719-104-10	s DIODE 1SS99
D404	8-719-104-10	s DIODE 1SS99
D405	8-719-104-10	s DIODE 1SS99
D406	8-719-911-19	s DIODE 1SS119
D407	8-719-911-19	s DIODE 1SS119
D500	8-719-911-19	s DIODE 1SS119
DL2	1-415-551-11	s DELAY LINE 140NS
DL301	1-415-404-21	s DELAY LINE 226uS
DL500	1-415-402-11	s DELAY LINE 300nS
FL201	1-409-410-11	s FILTER, TRAP 4.4MHZ
FL300	1-236-040-11	s FILTER, LOW-PASS
FL500	1-235-471-11	s FILTER, LOW-PASS
IC1	8-752-006-12	s IC CX20061
IC2	8-759-206-29	s IC TA7060AP-SONY
IC3	8-759-402-33	s IC AN607P
IC4	8-752-201-30	s IC CX22013
IC5	8-743-880-00	s IC BX-388
IC6	8-743-890-00	s IC BX-389
IC51	8-743-890-00	s IC BX-389

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Ref. No. or Q'ty	Part No.	SP Description
IC52	8-759-206-29	s IC TA7060AP-SONY
IC53	8-759-206-29	s IC TA7060AP-SONY
IC100	8-759-201-47	s IC TA7357AP
IC101	8-759-208-10	s IC TC4053BPHB
IC200	8-759-206-29	s IC TA7060AP-SONY
IC301	8-743-880-00	s IC BX-388
IC400	8-759-045-38	s IC MC14538BCP
IC401	8-749-900-87	s IC BX1470L
IC402	8-759-922-61	s IC SN16913P-A
IC403	8-759-206-29	s IC TA7060AP-SONY
IC500	8-752-006-12	s IC CX20061
IC501	8-759-982-21	s IC RC78L05A
IC502	8-759-111-69	s IC UPC1037HA
IC503	8-743-890-00	s IC BX-389
IC505	8-752-006-12	s IC CX20061
IC600	8-741-126-20	s IC BX1262
IC601	8-752-006-12	s IC CX20061
IC602	8-743-880-00	s IC BX-388
IC603	8-752-006-12	s IC CX20061
L1	1-410-482-31	s INDUCTOR 100uH
L3	1-410-087-31	s INDUCTOR 10mH
L4	1-410-087-31	s INDUCTOR 10mH
L6	1-410-482-31	s INDUCTOR 100uH
L7	1-410-464-11	s INDUCTOR 3.3uH
L52	1-410-087-31	s INDUCTOR 10mH
L53	1-410-476-11	s INDUCTOR 33uH
L102	1-410-482-31	s INDUCTOR 100uH
L103	1-410-482-31	s INDUCTOR 100uH
L203	1-410-087-31	s INDUCTOR 10mH
L204	1-410-482-31	s INDUCTOR 100uH
L400	1-410-482-31	s INDUCTOR 100uH
L401	1-410-482-31	s INDUCTOR 100uH
L402	1-410-482-31	s INDUCTOR 100uH
L501	1-410-482-31	s INDUCTOR 100uH
L502	1-410-482-31	s INDUCTOR 100uH
L503	1-410-482-31	s INDUCTOR 100uH
L506	1-410-482-31	s INDUCTOR 100uH
L600	1-410-482-31	s INDUCTOR 100uH
L601	1-410-482-31	s INDUCTOR 100uH
L602	1-410-471-11	s INDUCTOR 12uH
L603	1-410-476-11	s INDUCTOR 33uH
L604	1-410-470-11	s INDUCTOR 10uH
L605	1-410-482-31	s INDUCTOR 100uH
L650	1-410-470-11	s INDUCTOR 10uH
L651	1-410-482-31	s INDUCTOR 100uH
L653	1-410-471-11	s INDUCTOR 12uH
L654	1-410-482-31	s INDUCTOR 100uH
LV600	1-407-572-00	s COIL, VAR 33UH
Q1	8-729-266-92	s TRANSISTOR 2SC2669-0
Q2	8-729-266-92	s TRANSISTOR 2SC2669-0
Q4	8-729-266-92	s TRANSISTOR 2SC2669-0
Q5	8-729-266-92	s TRANSISTOR 2SC2669-0
Q6	8-729-266-92	s TRANSISTOR 2SC2669-0
Q7	8-729-266-92	s TRANSISTOR 2SC2669-0
Q8	8-729-266-92	s TRANSISTOR 2SC2669-0
Q9	8-729-900-89	s TRANSISTOR DTC144ES
Q10	8-729-266-92	s TRANSISTOR 2SC2669-0
Q11	8-729-266-92	s TRANSISTOR 2SC2669-0

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
Q12	8-729-266-92	s TRANSISTOR 2SC2669-O
Q51	8-729-266-92	s TRANSISTOR 2SC2669-O
Q52	8-729-266-92	s TRANSISTOR 2SC2669-O
Q53	8-729-900-89	s TRANSISTOR DTC144ES
Q54	8-729-900-89	s TRANSISTOR DTC144ES
Q57	8-729-266-92	s TRANSISTOR 2SC2669-O
Q58	8-729-900-89	s TRANSISTOR DTC144ES
Q59	8-729-266-92	s TRANSISTOR 2SC2669-O
Q100	8-729-266-92	s TRANSISTOR 2SC2669-O
Q101	8-729-119-76	s TRANSISTOR 2SA1115P
Q102	8-729-201-05	s TRANSISTOR 2SC2878-B
Q103	8-729-201-05	s TRANSISTOR 2SC2878-B
Q104	8-729-119-76	s TRANSISTOR 2SA1115P
Q105	8-729-119-76	s TRANSISTOR 2SA1115P
Q106	8-729-266-92	s TRANSISTOR 2SC2669-O
Q107	8-729-281-53	s TRANSISTOR 2SC1815-GR
Q108	8-729-119-76	s TRANSISTOR 2SA1115P
Q109	8-729-281-53	s TRANSISTOR 2SC1815-GR
Q110	8-729-266-92	s TRANSISTOR 2SC2669-O
Q111	8-729-266-92	s TRANSISTOR 2SC2669-O
Q112	8-729-266-92	s TRANSISTOR 2SC2669-O
Q113	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q114	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q200	8-729-266-92	s TRANSISTOR 2SC2669-O
Q202	8-729-119-76	s TRANSISTOR 2SA1115P
Q203	8-729-201-05	s TRANSISTOR 2SC2878-B
Q204	8-729-266-92	s TRANSISTOR 2SC2669-O
Q205	8-729-266-92	s TRANSISTOR 2SC2669-O
Q206	8-729-266-92	s TRANSISTOR 2SC2669-O
Q207	8-729-266-92	s TRANSISTOR 2SC2669-O
Q208	8-729-266-92	s TRANSISTOR 2SC2669-O
Q209	8-729-266-92	s TRANSISTOR 2SC2669-O
Q210	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q211	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q301	8-729-119-76	s TRANSISTOR 2SA1115P
Q310	8-729-266-92	s TRANSISTOR 2SC2669-O
Q400	8-729-266-92	s TRANSISTOR 2SC2669-O
Q401	8-729-266-92	s TRANSISTOR 2SC2669-O
Q402	8-729-266-92	s TRANSISTOR 2SC2669-O
Q403	8-729-266-92	s TRANSISTOR 2SC2669-O
Q404	8-729-266-92	s TRANSISTOR 2SC2669-O
Q405	8-729-266-92	s TRANSISTOR 2SC2669-O
Q406	8-729-119-76	s TRANSISTOR 2SA1115P
Q407	8-729-266-92	s TRANSISTOR 2SC2669-O
Q408	8-729-266-92	s TRANSISTOR 2SC2669-O
Q409	8-729-266-92	s TRANSISTOR 2SC2669-O
Q410	8-729-266-92	s TRANSISTOR 2SC2669-O
Q411	8-729-900-89	s TRANSISTOR DTC144ES
Q412	8-729-900-65	s TRANSISTOR DTA144ES
Q413	8-729-900-89	s TRANSISTOR DTC144ES
Q414	8-729-900-89	s TRANSISTOR DTC144ES
Q500	8-729-266-92	s TRANSISTOR 2SC2669-O
Q501	8-729-266-92	s TRANSISTOR 2SC2669-O
Q502	8-729-266-92	s TRANSISTOR 2SC2669-O
Q503	8-729-201-05	s TRANSISTOR 2SC2878-B
Q504	8-729-900-89	s TRANSISTOR DTC144ES
Q505	8-729-900-89	s TRANSISTOR DTC144ES
Q506	8-729-266-92	s TRANSISTOR 2SC2669-O
Q507	8-729-266-92	s TRANSISTOR 2SC2669-O

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Ref. No. or Q'ty	Part No.	SP Description
Q508	8-729-266-92	s TRANSISTOR 2SC2669-O
Q509	8-729-266-92	s TRANSISTOR 2SC2669-O
Q510	8-729-266-92	s TRANSISTOR 2SC2669-O
Q511	8-729-266-92	s TRANSISTOR 2SC2669-O
Q512	8-729-266-92	s TRANSISTOR 2SC2669-O
Q600	8-729-119-76	s TRANSISTOR 2SA1115P
Q601	8-729-266-92	s TRANSISTOR 2SC2669-O
Q602	8-729-266-92	s TRANSISTOR 2SC2669-O
Q603	8-729-266-92	s TRANSISTOR 2SC2669-O
Q604	8-729-266-92	s TRANSISTOR 2SC2669-O
Q605	8-729-900-89	s TRANSISTOR DTC144ES
Q650	8-729-266-92	s TRANSISTOR 2SC2669-O
Q651	8-729-266-92	s TRANSISTOR 2SC2669-O
Q652	8-729-266-92	s TRANSISTOR 2SC2669-O
Q653	8-729-266-92	s TRANSISTOR 2SC2669-O
Q654	8-729-201-05	s TRANSISTOR 2SC2878-B
Q655	8-729-266-92	s TRANSISTOR 2SC2669-O
Q656	8-729-201-05	s TRANSISTOR 2SC2878-B
Q657	8-729-201-05	s TRANSISTOR 2SC2878-B
R3	1-249-433-11	s CARBON 22K 5% 1/4W
R4	1-249-429-11	s CARBON 10K 5% 1/4W
R5	1-249-417-11	s CARBON 1K 5% 1/4W
R6	1-215-411-00	s METAL 390 1% 1/6W
R7	1-249-414-11	s CARBON 560 5% 1/4W
R8	1-249-417-11	s CARBON 1K 5% 1/4W
R9	1-249-413-11	s CARBON 470 5% 1/4W
R10	1-215-405-00	s METAL 220 1% 1/6W
R11	1-249-416-11	s CARBON 820 5% 1/4W
R12	1-249-417-11	s CARBON 1K 5% 1/4W
R13	1-249-418-11	s CARBON 1.2K 5% 1/4W
R14	1-249-425-11	s CARBON 4.7K 5% 1/4W
R15	1-215-405-00	s METAL 220 1% 1/6W
R16	1-215-405-00	s METAL 220 1% 1/6W
R17	1-249-421-11	s CARBON 2.2K 5% 1/4W
R20	1-249-423-11	s CARBON 3.3K 5% 1/4W
R21	1-249-430-11	s CARBON 12K 5% 1/4W
R22	1-249-433-11	s CARBON 22K 5% 1/4W
R23	1-215-405-00	s METAL 220 1% 1/6W
R25	1-215-405-00	s METAL 220 1% 1/6W
R26	1-249-417-11	s CARBON 1K 5% 1/4W
R27	1-249-416-11	s CARBON 820 5% 1/4W
R29	1-249-429-11	s CARBON 10K 5% 1/4W
R30	1-249-431-11	s CARBON 15K 5% 1/4W
R31	1-249-410-11	s CARBON 270 5% 1/4W
R32	1-249-413-11	s CARBON 470 5% 1/4W
R33	1-249-417-11	s CARBON 1K 5% 1/4W
R34	1-249-410-11	s CARBON 270 5% 1/4W
R35	1-249-405-11	s CARBON 100 5% 1/4W
R36	1-215-438-00	s METAL 5.1K 1% 1/6W
R37	1-215-394-00	s METAL 75 1% 1/6W
R38	1-249-441-11	s CARBON 100K 5% 1/4W
R39	1-249-437-11	s CARBON 47K 5% 1/4W
R40	1-249-433-11	s CARBON 22K 5% 1/4W
R41	1-249-417-11	s CARBON 1K 5% 1/4W
R42	1-249-416-11	s CARBON 820 5% 1/4W
R43	1-249-411-11	s CARBON 330 5% 1/4W
R44	1-249-421-11	s CARBON 2.2K 5% 1/4W
R45	1-249-421-11	s CARBON 2.2K 5% 1/4W
R46	1-249-421-11	s CARBON 2.2K 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
R51	1-249-414-11	s CARBON 560 5% 1/4W
R52	1-249-398-11	s CARBON 27 5% 1/4W
R53	1-249-411-11	s CARBON 330 5% 1/4W
R54	1-249-431-11	s CARBON 15K 5% 1/4W
R55	1-249-429-11	s CARBON 10K 5% 1/4W
R56	1-249-413-11	s CARBON 470 5% 1/4W
R57	1-249-413-11	s CARBON 470 5% 1/4W
R58	1-249-421-11	s CARBON 2.2K 5% 1/4W
R59	1-249-411-11	s CARBON 330 5% 1/4W
R60	1-249-437-11	s CARBON 47K 5% 1/4W
R61	1-249-421-11	s CARBON 2.2K 5% 1/4W
R62	1-249-433-11	s CARBON 22K 5% 1/4W
R63	1-215-402-00	s METAL 160 1% 1/6W
R64	1-249-411-11	s CARBON 330 5% 1/4W
R67	1-249-421-11	s CARBON 2.2K 5% 1/4W
R68	1-249-422-11	s CARBON 2.7K 5% 1/4W
R69	1-215-428-00	s METAL 2K 1% 1/6W
R70	1-249-418-11	s CARBON 1.2K 5% 1/4W
R100	1-215-405-00	s METAL 220 1% 1/6W
R101	1-249-421-11	s CARBON 2.2K 5% 1/4W
R102	1-249-429-11	s CARBON 10K 5% 1/4W
R103	1-247-883-00	s CARBON 150K 5% 1/4W
R104	1-249-425-11	s CARBON 4.7K 5% 1/4W
R105	1-247-895-00	s CARBON 470K 5% 1/4W
R106	1-249-430-11	s CARBON 12K 5% 1/4W
R107	1-249-413-11	s CARBON 470 5% 1/4W
R108	1-249-423-11	s CARBON 3.3K 5% 1/4W
R110	1-249-421-11	s CARBON 2.2K 5% 1/4W
R111	1-249-421-11	s CARBON 2.2K 5% 1/4W
R112	1-249-425-11	s CARBON 4.7K 5% 1/4W
R113	1-249-425-11	s CARBON 4.7K 5% 1/4W
R114	1-215-419-00	s METAL 820 1% 1/6W
R115	1-215-416-00	s METAL 620 1% 1/6W
R116	1-249-421-11	s CARBON 2.2K 5% 1/4W
R117	1-249-406-11	s CARBON 120 5% 1/4W
R118	1-249-406-11	s CARBON 120 5% 1/4W
R119	1-249-424-11	s CARBON 3.9K 5% 1/4W
R120	1-249-424-11	s CARBON 3.9K 5% 1/4W
R121	1-249-417-11	s CARBON 1K 5% 1/4W
R122	1-249-424-11	s CARBON 3.9K 5% 1/4W
R123	1-249-417-11	s CARBON 1K 5% 1/4W
R124	1-249-425-11	s CARBON 4.7K 5% 1/4W
R125	1-249-436-11	s CARBON 39K 5% 1/4W
R126	1-249-429-11	s CARBON 10K 5% 1/4W
R127	1-249-437-11	s CARBON 47K 5% 1/4W
R128	1-249-429-11	s CARBON 10K 5% 1/4W
R129	1-249-425-11	s CARBON 4.7K 5% 1/4W
R130	1-249-423-11	s CARBON 3.3K 5% 1/4W
R131	1-249-417-11	s CARBON 1K 5% 1/4W
R132	1-249-433-11	s CARBON 22K 5% 1/4W
R133	1-249-433-11	s CARBON 22K 5% 1/4W
R134	1-249-421-11	s CARBON 2.2K 5% 1/4W
R135	1-249-429-11	s CARBON 10K 5% 1/4W
R136	1-249-413-11	s CARBON 470 5% 1/4W
R137	1-249-418-11	s CARBON 1.2K 5% 1/4W
R138	1-249-417-11	s CARBON 1K 5% 1/4W
R139	1-249-428-11	s CARBON 8.2K 5% 1/4W
R140	1-249-429-11	s CARBON 10K 5% 1/4W
R141	1-249-426-11	s CARBON 5.6K 5% 1/4W

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Ref. No. or Q'ty	Part No.	SP Description
R142	1-249-405-11	s CARBON 100 5% 1/4W
R143	1-249-422-11	s CARBON 2.7K 5% 1/4W
R144	1-249-429-11	s CARBON 10K 5% 1/4W
R145	1-249-423-11	s CARBON 3.3K 5% 1/4W
R146	1-249-401-11	s CARBON 47 5% 1/4W
R147	1-249-401-11	s CARBON 47 5% 1/4W
R149	1-215-394-00	s METAL 75 1% 1/6W
R150	1-215-394-00	s METAL 75 1% 1/6W
R151	1-247-903-00	s CARBON 1M 5% 1/4W
R152	1-249-441-11	s CARBON 100K 5% 1/4W
R153	1-249-441-11	s CARBON 100K 5% 1/4W
R200	1-249-433-11	s CARBON 22K 5% 1/4W
R201	1-249-432-11	s CARBON 18K 5% 1/4W
R203	1-215-414-00	s METAL 510 1% 1/6W
R204	1-215-419-00	s METAL 820 1% 1/6W
R207	1-249-421-11	s CARBON 2.2K 5% 1/4W
R208	1-249-416-11	s CARBON 820 5% 1/4W
R209	1-249-433-11	s CARBON 22K 5% 1/4W
R210	1-249-433-11	s CARBON 22K 5% 1/4W
R211	1-249-423-11	s CARBON 3.3K 5% 1/4W
R212	1-215-424-00	s METAL 1.3K 1% 1/6W
R214	1-215-416-00	s METAL 620 1% 1/6W
R215	1-249-421-11	s CARBON 2.2K 5% 1/4W
R216	1-215-421-00	s METAL 1K 1% 1/6W
R217	1-215-397-00	s METAL 100 1% 1/6W
R218	1-249-417-11	s CARBON 1K 5% 1/4W
R219	1-249-429-11	s CARBON 10K 5% 1/4W
R220	1-249-417-11	s CARBON 1K 5% 1/4W
R221	1-249-418-11	s CARBON 1.2K 5% 1/4W
R222	1-249-417-11	s CARBON 1K 5% 1/4W
R223	1-249-429-11	s CARBON 10K 5% 1/4W
R224	1-249-428-11	s CARBON 8.2K 5% 1/4W
R225	1-249-426-11	s CARBON 5.6K 5% 1/4W
R226	1-249-421-11	s CARBON 2.2K 5% 1/4W
R227	1-249-405-11	s CARBON 100 5% 1/4W
R228	1-249-429-11	s CARBON 10K 5% 1/4W
R229	1-249-423-11	s CARBON 3.3K 5% 1/4W
R230	1-249-401-11	s CARBON 47 5% 1/4W
R231	1-249-401-11	s CARBON 47 5% 1/4W
R232	1-215-394-00	s METAL 75 1% 1/6W
R301	1-249-429-11	s CARBON 10K 5% 1/4W
R302	1-249-417-11	s CARBON 1K 5% 1/4W
R303	1-249-417-11	s CARBON 1K 5% 1/4W
R305	1-215-438-00	s METAL 5.1K 1% 1/6W
R306	1-215-394-00	s METAL 75 1% 1/6W
R307	1-249-441-11	s CARBON 100K 5% 1/4W
R335	1-215-431-00	s METAL 2.7K 1% 1/6W
R337	1-249-405-11	s CARBON 100 5% 1/4W
R338	1-215-421-00	s METAL 1K 1% 1/6W
R341	1-249-421-11	s CARBON 2.2K 5% 1/4W
R401	1-249-433-11	s CARBON 22K 5% 1/4W
R402	1-249-433-11	s CARBON 22K 5% 1/4W
R403	1-249-421-11	s CARBON 2.2K 5% 1/4W
R405	1-249-433-11	s CARBON 22K 5% 1/4W
R406	1-249-433-11	s CARBON 22K 5% 1/4W
R407	1-249-421-11	s CARBON 2.2K 5% 1/4W
R408	1-249-424-11	s CARBON 3.9K 5% 1/4W
R409	1-249-441-11	s CARBON 100K 5% 1/4W
R410	1-249-424-11	s CARBON 3.9K 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
R411	1-249-429-11	s CARBON 10K 5% 1/4W
R412	1-249-425-11	s CARBON 4.7K 5% 1/4W
R413	1-249-429-11	s CARBON 10K 5% 1/4W
R414	1-249-423-11	s CARBON 3.3K 5% 1/4W
R415	1-249-429-11	s CARBON 10K 5% 1/4W
R416	1-249-417-11	s CARBON 1K 5% 1/4W
R417	1-249-425-11	s CARBON 4.7K 5% 1/4W
R418	1-249-413-11	s CARBON 470 5% 1/4W
R419	1-249-417-11	s CARBON 1K 5% 1/4W
R420	1-249-425-11	s CARBON 4.7K 5% 1/4W
R421	1-249-425-11	s CARBON 4.7K 5% 1/4W
R422	1-249-410-11	s CARBON 270 5% 1/4W
R423	1-249-437-11	s CARBON 47K 5% 1/4W
R424	1-249-429-11	s CARBON 10K 5% 1/4W
R425	1-249-433-11	s CARBON 22K 5% 1/4W
R426	1-249-433-11	s CARBON 22K 5% 1/4W
R427	1-249-427-11	s CARBON 6.8K 5% 1/4W
R428	1-249-433-11	s CARBON 22K 5% 1/4W
R429	1-249-424-11	s CARBON 3.9K 5% 1/4W
R430	1-249-414-11	s CARBON 560 5% 1/4W
R431	1-249-433-11	s CARBON 22K 5% 1/4W
R433	1-249-423-11	s CARBON 3.3K 5% 1/4W
R434	1-249-421-11	s CARBON 2.2K 5% 1/4W
R435	1-249-405-11	s CARBON 100 5% 1/4W
R436	1-249-422-11	s CARBON 2.7K 5% 1/4W
R437	1-249-418-11	s CARBON 1.2K 5% 1/4W
R438	1-249-413-11	s CARBON 470 5% 1/4W
R439	1-215-432-00	s METAL 3K 1% 1/6W
R440	1-249-415-11	s CARBON 680 5% 1/4W
R441	1-249-417-11	s CARBON 1K 5% 1/4W
R442	1-249-417-11	s CARBON 1K 5% 1/4W
R443	1-249-429-11	s CARBON 10K 5% 1/4W
R444	1-249-426-11	s CARBON 5.6K 5% 1/4W
R445	1-249-423-11	s CARBON 3.3K 5% 1/4W
R446	1-249-405-11	s CARBON 100 5% 1/4W
R447	1-249-429-11	s CARBON 10K 5% 1/4W
R448	1-249-404-00	s CARBON 82 5% 1/4W
R449	1-249-425-11	s CARBON 4.7K 5% 1/4W
R450	1-249-437-11	s CARBON 47K 5% 1/4W
R451	1-249-437-11	s CARBON 47K 5% 1/4W
R500	1-249-431-11	s CARBON 15K 5% 1/4W
R501	1-249-431-11	s CARBON 15K 5% 1/4W
R502	1-249-417-11	s CARBON 1K 5% 1/4W
R503	1-249-421-11	s CARBON 2.2K 5% 1/4W
R504	1-249-432-11	s CARBON 18K 5% 1/4W
R506	1-249-416-11	s CARBON 820 5% 1/4W
R507	1-249-429-11	s CARBON 10K 5% 1/4W
R508	1-249-423-11	s CARBON 3.3K 5% 1/4W
R509	1-249-417-11	s CARBON 1K 5% 1/4W
R510	1-249-417-11	s CARBON 1K 5% 1/4W
R511	1-249-417-11	s CARBON 1K 5% 1/4W
R512	1-249-417-11	s CARBON 1K 5% 1/4W
R513	1-249-411-11	s CARBON 330 5% 1/4W
R514	1-249-417-11	s CARBON 1K 5% 1/4W
R515	1-249-417-11	s CARBON 1K 5% 1/4W
R516	1-249-423-11	s CARBON 3.3K 5% 1/4W
R517	1-249-437-11	s CARBON 47K 5% 1/4W
R518	1-249-437-11	s CARBON 47K 5% 1/4W
R519	1-249-429-11	s CARBON 10K 5% 1/4W

(VO-30 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R520	1-249-441-11	s CARBON 100K 5% 1/4W
R521	1-249-403-11	s CARBON 68 5% 1/4W
R522	1-249-421-11	s CARBON 2.2K 5% 1/4W
R523	1-249-429-11	s CARBON 10K 5% 1/4W
R524	1-249-429-11	s CARBON 10K 5% 1/4W
R525	1-249-429-11	s CARBON 10K 5% 1/4W
R526	1-249-425-11	s CARBON 4.7K 5% 1/4W
R527	1-249-421-11	s CARBON 2.2K 5% 1/4W
R530	1-249-433-11	s CARBON 22K 5% 1/4W
R531	1-249-429-11	s CARBON 10K 5% 1/4W
R532	1-249-417-11	s CARBON 1K 5% 1/4W
R533	1-249-417-11	s CARBON 1K 5% 1/4W
R534	1-249-421-11	s CARBON 2.2K 5% 1/4W
R535	1-249-417-11	s CARBON 1K 5% 1/4W
R536	1-249-421-11	s CARBON 2.2K 5% 1/4W
R537	1-249-429-11	s CARBON 10K 5% 1/4W
R538	1-249-433-11	s CARBON 22K 5% 1/4W
R539	1-249-433-11	s CARBON 22K 5% 1/4W
R540	1-249-417-11	s CARBON 1K 5% 1/4W
R541	1-249-417-11	s CARBON 1K 5% 1/4W
R542	1-249-417-11	s CARBON 1K 5% 1/4W
R558	1-249-425-11	s CARBON 4.7K 5% 1/4W
R559	1-249-417-11	s CARBON 1K 5% 1/4W
R600	1-249-429-11	s CARBON 10K 5% 1/4W
R601	1-247-883-00	s CARBON 150K 5% 1/4W
R603	1-249-429-11	s CARBON 10K 5% 1/4W
R604	1-249-405-11	s CARBON 100 5% 1/4W
R605	1-249-429-11	s CARBON 10K 5% 1/4W
R606	1-249-429-11	s CARBON 10K 5% 1/4W
R607	1-249-413-11	s CARBON 470 5% 1/4W
R608	1-215-409-00	s METAL 330 1% 1/6W
R609	1-249-413-11	s CARBON 470 5% 1/4W
R610	1-249-414-11	s CARBON 560 5% 1/4W
R611	1-249-413-11	s CARBON 470 5% 1/4W
R612	1-215-409-00	s METAL 330 1% 1/6W
R613	1-249-417-11	s CARBON 1K 5% 1/4W
R614	1-249-437-11	s CARBON 47K 5% 1/4W
R615	1-249-437-11	s CARBON 47K 5% 1/4W
R618	1-215-438-00	s METAL 5.1K 1% 1/6W
R619	1-215-394-00	s METAL 75 1% 1/6W
R620	1-249-441-11	s CARBON 100K 5% 1/4W
R621	1-249-429-11	s CARBON 10K 5% 1/4W
R622	1-249-438-11	s CARBON 56K 5% 1/4W
R623	1-249-414-11	s CARBON 560 5% 1/4W
R650	1-249-431-11	s CARBON 15K 5% 1/4W
R651	1-249-417-11	s CARBON 1K 5% 1/4W
R652	1-215-418-00	s METAL 750 1% 1/6W
R653	1-249-431-11	s CARBON 15K 5% 1/4W
R654	1-249-431-11	s CARBON 15K 5% 1/4W
R655	1-249-417-11	s CARBON 1K 5% 1/4W
R656	1-249-431-11	s CARBON 15K 5% 1/4W
R657	1-249-433-11	s CARBON 22K 5% 1/4W
R658	1-249-432-11	s CARBON 18K 5% 1/4W
R659	1-249-429-11	s CARBON 10K 5% 1/4W
R661	1-249-417-11	s CARBON 1K 5% 1/4W
R663	1-249-417-11	s CARBON 1K 5% 1/4W
R664	1-249-417-11	s CARBON 1K 5% 1/4W
R665	1-249-413-11	s CARBON 470 5% 1/4W
R666	1-249-437-11	s CARBON 47K 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(VO-30 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R667	1-249-418-11	s CARBON 1.2K 5% 1/4W
R668	1-249-417-11	s CARBON 1K 5% 1/4W
R669	1-249-441-11	s CARBON 100K 5% 1/4W
R670	1-249-441-11	s CARBON 100K 5% 1/4W
R671	1-249-413-11	s CARBON 470 5% 1/4W
RV1	1-228-991-00	s RES, ADJ, METAL 2.2K
RV2	1-228-994-00	s RES, ADJ, METAL 10K
RV3	1-228-991-00	s RES, ADJ, METAL 2.2K
RV4	1-228-991-00	s RES, ADJ, METAL 2.2K
RV5	1-228-990-00	s RES, ADJ, METAL 1K
RV51	1-228-990-00	s RES, ADJ, METAL 1K
RV52	1-228-990-00	s RES, ADJ, METAL 1K
RV100	1-228-993-00	s RES, ADJ, METAL 4.7K
RV101	1-228-991-00	s RES, ADJ, METAL 2.2K
RV201	1-228-991-00	s RES, ADJ, METAL 2.2K
RV302	1-228-991-00	s RES, ADJ, METAL 2.2K
RV400	1-228-995-00	s RES, ADJ, METAL 22K
RV401	1-228-994-00	s RES, ADJ, METAL 10K
RV402	1-228-991-00	s RES, ADJ, METAL 2.2K
RV403	1-228-993-00	s RES, ADJ, METAL 4.7K
RV404	1-228-991-00	s RES, ADJ, METAL 2.2K
RV405	1-228-998-00	s RES, ADJ, METAL 220K
RV501	1-228-989-00	s RES, ADJ, METAL 470
RV600	1-228-996-00	s RES, ADJ, METAL 47K
RV601	1-228-990-00	s RES, ADJ, METAL 1K
RV602	1-228-993-00	s RES, ADJ, METAL 4.7K
TH400	1-800-200-00	s THERMISTOR S-3K
TH401	1-800-200-00	s THERMISTOR S-3K
X500	1-527-511-00	s CRYSTAL 5.119166MHz
X650	1-527-374-00	s CRYSTAL 5.35742180MHz

YC-46 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7062-153-A	o MOUNTED CIRCUIT BOARD, YC-46
C101	1-130-483-00	s MYLAR 0.01uF 5% 50V
C108	1-130-483-00	s MYLAR 0.01uF 5% 50V
C110	1-107-210-00	s MICA 22PF 5% 500V
C115	1-130-483-00	s MYLAR 0.01uF 5% 50V
C117	1-107-080-91	s MICA 62PF 5% 50V
C118	1-107-209-91	s MICA 20PF 5% 500
C120	1-107-075-91	s MICA 39PF 5% 50V
C121	1-107-082-91	s MICA 75PF 5% 50V
C150	1-107-085-00	s MICA 100PF 5% 50V
C201	1-130-483-00	s MYLAR 0.01uF 5% 50V
C202	1-107-087-00	s MICA 120PF 5% 50V
C203	1-130-483-00	s MYLAR 0.01uF 5% 50V
C204	1-130-491-00	s MYLAR 0.047uF 5% 50V
C206	1-130-483-00	s MYLAR 0.01uF 5% 50V
C207	1-130-491-00	s MYLAR 0.047uF 5% 50V
C208	1-130-491-00	s MYLAR 0.047uF 5% 50V
C209	1-130-491-00	s MYLAR 0.047uF 5% 50V
C210	1-130-491-00	s MYLAR 0.047uF 5% 50V
C211	1-107-202-91	s MICA 10PF 5% 500
C212	1-130-491-00	s MYLAR 0.047uF 5% 50V
C213	1-130-491-00	s MYLAR 0.047uF 5% 50V
C214	1-130-491-00	s MYLAR 0.047uF 5% 50V
D106	8-719-911-19	s DIODE 1SS119
D107	8-719-911-19	s DIODE 1SS119
D108	8-719-911-19	s DIODE 1SS119
D109	8-719-911-19	s DIODE 1SS119
FL100	1-235-475-12	s FILTER, LOW-PASS
FL102	1-236-564-11	s FILTER, LOW-PASS
FL200	1-236-835-11	s FILTER, BANDPASS
IC100	8-752-006-12	s IC CX20061
IC101	8-752-006-12	s IC CX20061
IC200	8-752-006-12	s IC CX20061
IC201	8-752-006-12	s IC CX20061
L100	1-410-482-31	s INDUCTOR 100uH
L101	1-410-482-31	s INDUCTOR 100uH
L103	1-410-473-11	s INDUCTOR 18uH
L200	1-410-482-31	s INDUCTOR 100uH
L201	1-410-482-31	s INDUCTOR 100uH
Q100	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q101	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q102	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q103	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q104	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q105	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q106	8-729-900-89	s TRANSISTOR DTC144ES
Q107	8-729-900-89	s TRANSISTOR DTC144ES
Q109	8-729-900-89	s TRANSISTOR DTC144ES
Q110	8-729-900-89	s TRANSISTOR DTC144ES
Q200	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q201	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q202	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q203	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q204	8-729-119-78	s TRANSISTOR 2SC2785-HFE
Q205	8-729-119-78	s TRANSISTOR 2SC2785-HFE
R101	1-249-430-11	s CARBON 12K 5% 1/4W

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

(YC-46 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R102	1-249-429-11	s CARBON 10K 5% 1/4W
R103	1-249-417-11	s CARBON 1K 5% 1/4W
R105	1-215-414-00	s METAL 510 1% 1/6W
R106	1-249-429-11	s CARBON 10K 5% 1/4W
R107	1-215-407-00	s METAL 270 1% 1/6W
R108	1-215-429-00	s METAL 2.2K 1% 1/6W
R109	1-247-830-11	s CARBON 910 5% 1/4W
R111	1-249-433-11	s CARBON 22K 5% 1/4W
R112	1-249-437-11	s CARBON 47K 5% 1/4W
R113	1-249-421-11	s CARBON 2.2K 5% 1/4W
R115	1-215-421-00	s METAL 1K 1% 1/6W
R116	1-249-421-11	s CARBON 2.2K 5% 1/4W
R117	1-249-432-11	s CARBON 18K 5% 1/4W
R118	1-215-428-00	s METAL 2K 1% 1/6W
R119	1-215-429-00	s METAL 2.2K 1% 1/6W
R120	1-249-429-11	s CARBON 10K 5% 1/4W
R121	1-215-414-00	s METAL 510 1% 1/6W
R122	1-249-417-11	s CARBON 1K 5% 1/4W
R123	1-215-422-00	s METAL 1.1K 1% 1/6W
R124	1-249-432-11	s CARBON 18K 5% 1/4W
R125	1-249-429-11	s CARBON 10K 5% 1/4W
R126	1-249-406-11	s CARBON 120 5% 1/4W
R129	1-215-428-00	s METAL 2K 1% 1/6W
R130	1-249-421-11	s CARBON 2.2K 5% 1/4W
R131	1-249-426-11	s CARBON 5.6K 5% 1/4W
R201	1-215-417-00	s METAL 680 1% 1/6W
R203	1-215-423-00	s METAL 1.2K 1% 1/6W
R204	1-249-419-11	s CARBON 1.5K 5% 1/4W
R205	1-249-434-11	s CARBON 27K 5% 1/4W
R206	1-249-433-11	s CARBON 22K 5% 1/4W
R207	1-249-425-11	s CARBON 4.7K 5% 1/4W
R208	1-249-433-11	s CARBON 22K 5% 1/4W
R209	1-249-429-11	s CARBON 10K 5% 1/4W
R210	1-249-421-11	s CARBON 2.2K 5% 1/4W
R211	1-249-432-11	s CARBON 18K 5% 1/4W
R212	1-249-429-11	s CARBON 10K 5% 1/4W
R213	1-215-421-00	s METAL 1K 1% 1/6W
R214	1-215-421-00	s METAL 1K 1% 1/6W
R215	1-249-438-11	s CARBON 56K 5% 1/4W
R216	1-249-437-11	s CARBON 47K 5% 1/4W
R217	1-249-421-11	s CARBON 2.2K 5% 1/4W
R218	1-215-415-00	s METAL 560 1% 1/6W
R219	1-215-415-00	s METAL 560 1% 1/6W
R220	1-215-429-00	s METAL 2.2K 1% 1/6W
R222	1-249-432-11	s CARBON 18K 5% 1/4W
R223	1-249-429-11	s CARBON 10K 5% 1/4W
R224	1-249-399-11	s CARBON 33 5% 1/4W
R225	1-215-423-00	s METAL 1.2K 1% 1/6W

FRAME

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7048-389-A	s DRUM ASS'Y, DGH-68A-R
1pc	A-7049-328-A	s DRUM ASS'Y, DGH-68-R
1pc	△ 1-532-203-00	s FUSE, TIME-LAG
1pc	1-535-535-11	s TERMINAL, SHAFT GROUND
1pc	1-555-724-00	o WIRE, GROUND
C901	1-161-057-00	s CERAMIC 0.033uF 10% 50V
C1001	1-161-057-00	s CERAMIC 0.033uF 10% 50V
CN1001	1-561-577-21	s CONNECTOR, 8P, FEMALE "MONITOR TV"
CN1002	1-507-467-00	s JACK, PIN 1P, FEMALE "MONITOR, AUDIO"
CN1003	1-562-227-21	s CONNECTOR, BNC, FEMALE "MONITOR VIDEO"
CN1004	1-562-227-21	s CONNECTOR, BNC, FEMALE "VIDEO IN"
CN1005	1-562-227-21	s CONNECTOR, BNC, FEMALE "SYNC IN"
CN1006	1-562-227-21	s CONNECTOR, BNC, FEMALE "VIDEO OUT"
CN1007	1-563-029-21	s CONNECTOR, XLR 3P, FEMALE "AUDIO LINE IN CH-1/L"
CN1008	1-563-029-21	s CONNECTOR, XLR 3P, FEMALE "AUDIO LINE IN CH-2/R"
CN1007	1-566-850-31	s CONNECTOR (S), TERMINAL 4P "S VIDEO IN"
CN1008	1-566-850-31	s CONNECTOR (S), TERMINAL 4P "S VIDEO OUT"
CN1009	1-507-797-21	s JACK, LARGE TYPE 2P
CN1011	1-507-854-00	s JACK, PHONE "HEADPHONES"
CN1012	1-563-030-21	s CONNECTOR, XLR 3P, MALE "AUDIO LINE OUT CH-1/L"
CN1013	1-563-030-21	s CONNECTOR, XLR 3P, MALE "AUDIO LINE OUT CH-2/R"
CN1014	1-561-045-00	s CONNECTOR, RF, FEMALE "DUB OUT"
CN1016	△ 1-560-222-11	s INLET, AC 3P, MALE "AC IN"
CS1001	1-806-682-51	s SENSOR, CONDENSATION
M1002	8-835-304-11	s MOTOR, DC U-11B "REEL"
M1003	8-835-364-01	s MOTOR, DC BHF-2802B "CAPSTAN"
M1005	8-835-138-01	s MOTOR, DC (DNR-5301B)
M1006	1-541-360-21	s MOTOR, FAN
ME1001	1-520-506-11	s METER AUDIO LEVEL CH-1
ME1002	1-520-506-11	s METER AUDIO LEVEL CH-2
PM1001	△ 1-454-377-31	s SOLENOID "BRAKE"
S1001	△ 1-570-117-41	s SWITCH, ROCKER "POWER"
S1002	1-553-226-00	s SWITCH, LEAF "CASSETTE DOWN"
S1003	1-570-407-11	s SWITCH, SLIDE "CASSETTE IN"
S1010	1-572-298-21	s SWITCH, PUSH (3 KEY) "REC PROOF/MPHG/ME/MP"

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.

14-4. PACKING MATERIAL AND ACCESSORIES

Ref. No. or Q'ty	Part No.	SP Description
1	△1-556-761-11	s CORD, POWER (3 CORE)
1	3-701-630-00	s BAG, POLYETHYLENE
1	3-701-648-00	s BAG, POLYETHYLENE
1	3-738-942-01	o CUSHION (LOWER)
1	3-738-943-01	o CUSHION (UPPER)
1	3-738-952-01	o SPACER
1	3-738-959-01	o INDIVIDUAL CARTON
1	△3-750-690-41	s MANUAL, INSTRUCTION

14-5. FIXTURE (OPTION)

Part No.	SP Description
Y-2031-001-1	o CLEANING FLUID
J-6080-824-A	o FWD, REV WINDING TORQUE CASSETTE
J-6080-825-A	o MODE SELECTOR
J-6080-826-A	o NO.6 GUIDE LOCK SCREW DRIVER
J-6080-827-A	o DIAL TENSION GAUGE
J-6080-831-A	o TENSION MEASUREMENT REEL
J-6080-832-A	o TENSION MEASUREMENT REEL
J-6080-840-A	o SMALL ADJUSTMENT MIRROR
J-6080-883-A	o RE/SWP CONNECTOR
J-6080-884-A	o CTL CONNECTOR
J-6080-891-A	o TRACK SHIFT TOOL
7-700-766-01	o HEXAGONAL SCREWDRIVER
7-741-900-53	o WIPING CLOTH
8-967-992-17	o ALIGNMENT TAPE, WR2-3CS
8-967-995-07	o ALIGNMENT TAPE, WR5-1CP
8-967-995-18	o ALIGNMENT TAPE, WR5-7CE
8-967-995-47	o ALIGNMENT TPPE, WR5-4CSP
8-967-995-48	o ALIGNMETN TAPE, WR5-8CSE

NOTE: Please see pages 14-15 thru 14-18 for the parts that are not listed in the parts list.



SPECIFICATIONS

System	
Recording system	Rotary 2-head helical scan Luminance: FM recording Color signal: converted subcarrier direct recording
Video signal system	CCIR standards, PAL color
Audio recording system	Normal recording AFM: Rotary head, FM system (monaural) PCM: PCM format (two channels)

Video	
Inputs	VIDEO IN (BNC type) × 1 1.0 Vp-p±0.3 Vp-p, 75 ohms, unbalanced, sync negative S-VIDEO IN (4-pin mini-DIN) × 1 Luminance: 1.0 V p-p, 75 ohms, unbalanced, sync negative Chrominance: 0.3 V p-p at burst level, 75 ohms, unbalanced
Outputs	VIDEO OUT (BNC type) × 1 1.0 Vp-p±0.2 Vp-p, 75 ohms, unbalanced, sync negative DUB OUT (7-pin) × 1 MONITOR TV (8-pin) × 1 MONITOR VIDEO (BNC type) × 1 S-VIDEO OUT (4-pin mini-DIN) × 1 Luminance: 1.0 V p-p, 75 ohms, unbalanced, sync negative Chrominance: 0.3 V p-p at burst level, 75 ohms, unbalanced
Horizontal resolution	Hi8 mode recording: 400 lines (both B/W and color) (S-VIDEO signals)
S/N	Hi8 mode 45 dB (with ME tape) Conventional format 45 dB (color)
Sync signal input	SYNC IN (BNC type) × 1 2.5 Vp-p (1 to 5 Vp-p), 75 ohms, unbalanced
Recording level control	Automatic

Audio	
Input	AUDIO LINE IN CH-1/L, CH-2/R (XLR 3-pin female) × 1 each +4 dB, 10 k ohms, balanced MICROPHONES CH-1/L, CH-2/R (phone jack) × 1 each -60 dB, 3 k ohms, unbalanced
Outputs	AUDIO LINE OUT CH-1/L, CH-2/R (XLR 3-pin male) × 1 each +4 dBm (at 600 ohm load), balanced MONITOR AUDIO (phono jack) × 1 -5 dB (at 47 k ohm load) MONITOR TV (8 pin) × 1 HEADPHONES (stereo phone jack) For 8-ohm headphones Level adjustable (from -26 to -46 dB)
Frequency response	AFM: 30 to 15,000 Hz PCM: 20 to 15000 Hz (both audio channel 1 and 2)
Dynamic range	PCM: more than 80 dB
Recording level control	Manual or limiter selectable
PCM sampling frequency	31.5 kHz

Other functions	
Pause	A still picture is obtained with long pause function
Search	Still, 1/30 to 15 times normal speed in forward direction, 1/30 to 13 times normal speed in reverse direction
Sync system	Automatic switching between internal and external
Dropout compensator	Built-in

Tape transport	
Tape speed	20.05 mm/sec.
Recording and playback time	Approx. 90 minutes (in SP mode)
Fast forward and rewind time	Within 3 minutes (with E5-90/P5-90)
Tape compatibility	8 mm video cassette tapes
Usable tapes	E5-HME, P5-MP series and equivalent

General	
Power requirements	Rated voltage: 220 to 240 V AC, 50/60 Hz Operating voltage: 198 to 264 V AC, 48 to 64 Hz
Power consumption	55 W
Operating position	Horizontal (up to 20 degrees)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Operating temperature	5°C to 40°C (41°F to 104°F)
Dimensions	424 × 146.5 × 452 mm (w/h/d) (16 3/4 × 5 7/8 × 17 7/8 inches) not including projecting parts and controls
Weight	Approx. 14 kg (30 lb 14 oz)
Supplied accessories	AC power cord (1) Operating instructions (1)

Design and specifications are subject to change without notice.

Recommended video equipment and accessories	
Editing Control Unit RM-450CE, RM-440 (when the BKU-703A installed)	
Color Video Monitor Sony CVM and PVM series	
Color Video Camera Sony DXC series	
33P Editing Interface BKU-703A	
Remote Control Unit RM-500, RM-580 (when the BKU-703A installed)	
Cleaning Cassette V8-25CLH	
Remote Control Cable RCC-5G (9-pin), RCC-5F (33-pin)	
Dubbing Cable VDC-5 (5 m)	
Monitor Connecting Cable VMC-3P (3 m), VMC-5P (5 m), VMC-10P (10 m)	
Multi Remote Control Unit RM-555 (when the BKU-703A installed)	
Video and Audio Switcher BVS-500	
VTR Selector RM-V5	
Rack Mount Kit RMM-980	
S-VIDEO connecting cable YC-30V (3 m)	

